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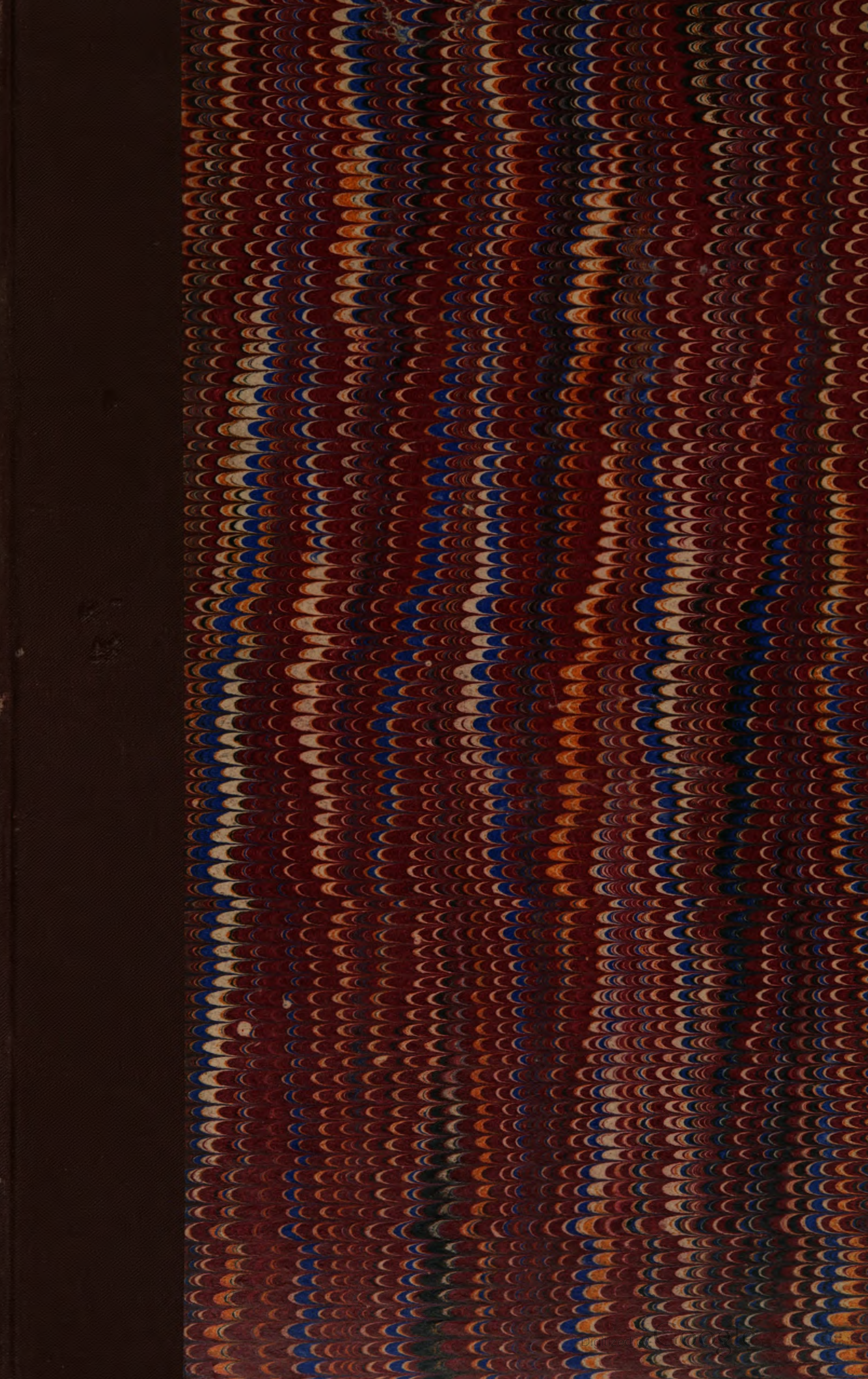

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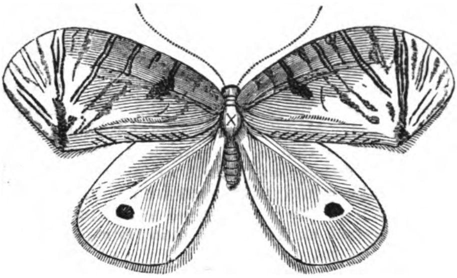

PSYCHOPSIS MIMICA.

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1875.

"Insects are usually pointed out to us by those who are about us as ugly, filthy, and noxious creatures; and the whole insect-world—butterflies, perhaps, and some few others excepted—are devoted by one universal ban to proscription and execration, as fit only to be trodden under our feet and crushed; so that, often, before we can persuade ourselves to study them we have to remove from our minds prejudices deeply rooted and of long standing." —KIRBY AND SPENCE.

"The importance of insects to us, both as sources of good or evil, I shall endeavour to prove at large hereafter; but for the present, taking this for granted, it necessarily follows that the study of them must also be important: for when we suffer from them, if we do not know the cause, how are we to apply a remedy that may diminish or prevent their ravages? Ignorance in this respect often occasions us to mistake our enemies for our friends, and our friends for our enemies; so that when we think to do good we only do harm, destroying the innocent and letting the guilty escape. Many such instances have occurred. Middleton, in his 'Agriculture of Middlesex,' speaking of the plant-louse that is so injurious to the bean, tells us that the ladybirds are supposed either to generate or to feed upon them. Had he been an entomologist he would have been in no doubt whether they were beneficial or injurious; on the contrary, he would have recommended that they should be encouraged as friends to man, since no insects are greater devourers of plant-lice."—ID.

CONTENTS.

ALPHABETICAL LIST OF CONTRIBUTORS.

Adams, C. Lemesle 112
Anderson, Joseph, jun. 159, 221, 236, 237, 281, 282
Ashby, James 43
Aspinwall, J. H. 229

Baker, George 109
Barrett, Arthur A. 278
Barrett, J. Platt 283
Battersby, Mrs. F. I. 55
Benson, John M. 54
Benson, T. 143
Bentall, S. R. 182
Biggs, C. J. 223, 275
Bignell, G. C. 55, 89
Bird, George W. 87
Birkin, Stanley 221, 228
Bisshopp, E. F. 160
Bliss, Arthur 230
Boden, Charles 226
Borrer, W. 164
Boswell, John T. 161, 165
Bridgman, J. B. 112, 113
Briggs, T. R. Archer 233, 236, 299
Bristow, John 220, 284
Brook, George 199, 240
Brown, Benjamin 164
Browne, D. G. Lathom 276
Brunton, T. 222
Butler, E. A. 300

Cansdale, W. D. 221, 223, 231
Cave-Browne, Rev. J. 225, 300
Channon, C. 228
Channon, H. J. 193, 233
Clark, John 277
Clifford, J. R. S. 20, 22, 23
Clifton, Charles 58
Cole, B. G. 125
Cooper, Bernard 84, 224
Corbin, G. B. 137, 139, 268, 280
Cowan, D. G. 223
Cox, H. Ramsay 103, 106, 134, 179
Crallan, Rev. Thomas E. 53, 88
Crewe, Rev. H. Harpur 295, 302

Deane, James 235
Digby, Cyril 197
Dobrée, N. F. 133
Doubleday, Henry (the late) 37, 41, 106, 108, 110, 135, 141
Duprey, Frank W. 225

Eales, Christopher 196
Evan, John 161

Farn, A. B. 135
Fitch, E. A. 75, 76, 98, 99, 121, 122, 144, 146, 147, 169, 170, 221, 233, 236, 254, 289, 302
Forbes, W. A. 41, 89
Frere, John Tudor 220
Frohawk, W. 277
Fust, H. Jenner, jun. 234

Gill, Battershell 229
Gregson, C. S. 38, 82, 199
Greville, E. Erskine 115
Grubb, John 270

Haggar, G. 227, 234, 300
Hammond, W. Oxenden 239
Harris, C. 224, 239
Harrison, John 219

Harwood, W. H. 185, 198, 199, 200
Hawkins, J. 300
Herkomer, Mrs. Hubert 73, 97, 121, 145, 169
Hervey, Rev. A. C. 183
Hodgkinson, J. B. 42, 55, 184, 197
Howe, T. L. 283
Hunter, A. E. 160

Jackson, J. 199
Jagger, W. 182
Jennings, Rev. P. H. 109, 130, 147, 172, 180, 183, 217, 223
Johnson, William 22
Jones, H. 223
Jones, J. 142

Kay, R. 195, 198, 302
King, J. 226

Laddiman, R. 198, 220, 231, 277
Langley, Alfred F. 161
Law, John 222, 277
Leconte, John L., M.D. 8
Lewis, W. Arnold, F.L.S. 127
Lilly, J. A. 226, 279
Livett, H. W., M.D. 278, 294
Lockyer, Bernard 160, 163
Long, C. F. 200, 271
Ludlow, Walter 270
Luff, W. A. 29, 111, 131, 271

Machin, W. 80, 113
Macmillan, W. 118
Madden, Rev. G. C. B. 223
Majendie, S. R. 197
Manders, L. 271
Mann, Charles 92
Mann, W. K. 222
Mathew, Gervase F., R.N., F.L.S. 12, 89, 99
Matthews, T. 237
May, J. W. 5, 26, 49, 76, 123
McRae, W. 278
Meade, R. H. 188
Meek, E. G. 231, 283, 288
Melville, J. Cosmo 133
Mercer, J. W. 198
Michael, Annie 279
Mills, Rev. J. W. 166, 276
Milne, Oswald 271
Mosley, S. L. 19, 21, 22, 54, 167

Newman, Edward 1, 22, 23, 24, 25, 30, 37, 42, 43, 46, 58, 59, 67, 91, 92, 93, 107, 108, 110, 111, 113, 114, 115, 116, 117, 118, 132, 134, 135, 137, 141, 142, 143, 144, 150, 162, 167, 175, 185, 186, 188, 189, 190, 192, 193, 195, 200, 216, 234, 236, 237, 238, 240, 241, 258, 272, 275, 286, 287, 296, 298, 301, 303, 304
Nicholls, H. 222
Nicholson, W. N. 114

Parker, E. C. 228
Parker, J. 283
Parry, G. 183, 229
Parsons, W. E. 224, 226
Paul, Arthur W. 280
Pearson, J. H. 276
Pease, T. H. Ormston, 224
Peters, John 221
Phillips, F. G. 167
Phillips, F. J. 117
Porritt, Geo. T. 55, 56, 183, 218, 285, 294
Povall, James 277
Potts, John 180
Pratt, D. 37
Preston, J. 220
Purday, William 225
Purdue, J. 280

Randall, W. Sidney 32
Raynor, Gilbert H. 132, 164, 230, 276, 300
Reeks, Henry 165, 186, 268
Richardson, Nelson M. 21
Ridley, H. N. 223
Robinson, Isaac 228
Rope, H. J. 270
Ruston, A. Harold 86, 228
Rydon, Arthur 91

Sarll, John T. 228, 282
Sawyer, James 132
Seabrook, C. 282
Service, Robert 282
Sharp, J. E. 220, 285
Sidebotham, Joseph 163
Simmons, C. W. 181, 199, 229
Slack, Henry J. 286
Smallwood, Rev. G. A. 194, 224, 238, 240
Smethurst, C. 277
Sotheby, Rosa M. 276

South, R. 271, 282
Spiller, A. J. 281
Standish, F. O. 23
Stansell, Frederic 158
Stürmer, S. von 239, 287
Sumner, John 161, 166

Talbot, William 89
Thomas, W. 132, 143, 219, 229, 283
Thomson, Edward 141
Thorpe, John 188
Threlfall, J. H. 105
Thurnall, A. 52, 135, 200
Trafford, F. A. 277
Tuely, N. C. 160
Tugwell, W. H. 164, 291
Vicary, Charles G. 224, 227, 278, 281
Vine, A. 282

Wailly, Alexander 197
Waldegrave, Right Hon. Earl 270
Walker, Francis (the late) 15
Walker, Frederic 4, 182
Wassermann, J. C. 19, 38, 181, 224
Webb, Sydney 184
Wileman, A. E. 226
Wilson, A. R. 141
Wilson, Henry F. 198
Wilson, Owen 232
Wittich, H. 134
Wood, Alfred 232
Worthington, Thomas 221
Wright, Charles 143

ALPHABETICAL LIST OF SUBJECTS.

Acentropus niveus at Sheerness 283
Acherontia Atropos in Parliament Street 225
Acidalia aversata 173
„ emarginata, life-history of 180
„ remutata 148
Acids, effect of on insects 236
Acronycta Alni near Nottingham 228; at Chatteris *id.*; larva of 285
Agrianisa myrmecoides 17
Agrotis crassa in Guernsey 111
„ Helvetina 135
Allogastra 8
Amara continua at Caterham and Mickleham 118
Amphydasis Betularia 166
Anarta Myrtilli, economy of 23
Andrena atriceps, Stylops taken in 210
„ Trimmerana, living larva in 213
Anticlea badiata 130
„ rubidata 218
„ sinuata, 183
Ants, white, economy of 69
Apatura Iris, bait for 159, 182; larva of 160
Aphilothrix autumnalis 255
„ callidoma 290
„ collaris 289
„ gemmæ 146
„ globuli 254
„ lucida 145
„ solitaria 169
Arachnida, notes on the 32
Arctia Isabella 38
Argynnis Niobe, capture of in North Lancashire 82; near Canterbury 183
„ Selene, variety of 25
Aspilates citraria 149
Asthena candidata 130
„ luteata 148
Astynomus ædilis at Cardiff 283

Bait for Apatura Iris 159
Beating-tray, the Bignell 89
Bee-keeping 68
Bees, stingless honey, economy of 69; honey 234; destruction of fruit by 298; export of to New Zealand 304
Beetle destructive to mangold-wurzel 135, 186; name of a 143, 239; Colorado or tiger *id.*
Beetles in tea 43, 59

Bombyx Pernyi, larvæ of 22
„ Quercus, pale male of 161; female pupæ of attractive to males 227
Bottle, cyanide, improved 113
Butterfly, blue, in April 112; vitality in leg of 233
Byrsopidæ 11

Cabera exanthemaria 217
„ pusaria 149
Callidium violaceum, abundance of 185
Captures of Lepidoptera in 1874 19; in May and July, 1874, in the New Forest 84; in Somersetshire 158; near Buxton 197; in Kent 218; of Lepidoptera 219; at sugar 281; at Newton Abbot *id.*
Catephia alchymista in Sussex 164; near Colchester 185
Catocala electa at Brighton 282
„ promissa near Ipswich 200
„ sponsa near Petersfield 270
Catoptria Aspidiscana at Grange 184
Centipede, luminous 115
Cerambycidæ 61
Chœrocampa Celerio at Hayward's Heath 53
„ Elpenor, &c., at sugar 183
„ lineata in Glamorgan 161
Chekanops under the elytra of a Passalus 211
Chelifer cancroides 185
Chelonia villica 166
Chrysomela cerealis 215
Cidaria corylata 174
„ miata 130
„ populata, description of the larva of 294
„ Silaceata, unusual appearance of 23
Cimbex Lucorum 5
Cirrœdia xerampelina, larvæ of 135; at Grantham 228; near Manchester 229; variety of 238; at Hendon 282; in Scotland *id.*
Cladius difformis 26
Cleora glabraria, description of the larva of 193
Clostera curtula, variety of 134
Cockchaffer, colouring matter from the 119
Cocoon of Tenthredo Cratægi 143
Coleophora new to Britain: Coleophora Tripoliella 55
Coleophora deauratella near Witham 231
Coleoptera, Rhynchophorous, classification of 8; rare British 48; Longicorn, synonymical notes on 60; parasitic 214
Colias Edusa on the wing 198; near Long Stratton and Nocton *id.*; in Norfolk *id.*; near Chepstow 220; near Hendon and Hampstead *id.*; near Norwich *id.*; at Darlington 221; at Nottingham *id.*; in Suffolk *id.*; at Maldon *id.*; near Alresford *id.*; near Petersfield 270; at Hitchin *id.*; at Hendon 271; at Ipswich *id.*; near Maldon 300; at York *id.*
„ Helice at Alresford 221
„ Hyale in May 160; early appearance of *id.*; near Long Stratton 198; in Norfolk *id.*; in Suffolk 221; at Maldon *id.*; near Witham *id.*; near Alresford *id.*; at Maidstone 225; abundance of in Suffolk 270; near Petersfield *id.*; near Birmingham *id.*; at Hitchin *id.*; at Ipswich 271; abundant 300
Collecting in the Lake District 19; as it was and as it now is 103; and collectors, some remarks on 127
Collection, Herrich-Schæffer's 45
Collectors, a few remarks on 179; and localities 139
Colletes cunicularis, a colony of, founded at Shirley Common 119
Coremia quadrifasciata, description of the larva of 109
Corycia taminata 174
„ temerata 173
Cosmia pyralina 230
Cotoneasters, moths at 164
Cucullia Gnaphalii at Hayward's Heath 53; near Seal, in Kent 229
„ Scrophulariæ 37, 54
Curculio attacked by a fungus 214
Cynips amblycera 121
„ calyciformis 99
„ coriaria 75
„ galeata 121
„ glutinosa 73
„ lignicola on Quercus Phellos 4
„ polycera 97

Cynips polycera *var.* subterranea 97

Davis, Mr., death of 144
Deformities and varieties 268
Deilephila Galii near Norwich 198; at Weybridge 271
Deiopeia pulchella 45; near Scarborough 54; at Budleigh-Salterton 226; at Biggleswade *id.*; near Kingsdown *id.*; near Paignton *id.*, 279; at Eastbourne 226; at the Land's End 279; at Bournemouth 280; at Waltham Cross *id.*; in Devonshire *id.*; at Hastings 300; in India *id.*
Dianthœcia capsincola at sugar 200
Dicrorampha Tanacetana at Grange 184
Diloba cæruleocephala, variety of 62
Diptera 167, 188
Dog-tick 285
Doubleday, Mr., death of 192, 213, 240
Dragonflies, to keep the colour of 237
Dryinoidæ 15

Economy of Anarta Myrtilli 23; of white ants 69; of stingless honey-bees *id.*
Emmelesia decolorata 217; description of the larva of 194
„ unifasciata at West Wickham 41, 89
Emphytus serotinus 123
Ennomos fuscantaria 282
Entomological correspondent, English, desired for Wisconsin, U.S. 92
Entomological Society, removal of 216
Entomological Society's Proceedings 45, 59, 118, 190, 207
Entomologising in North Kent, a month's 291
Entozoa in ox-beef 239
Ephippiphora ravulana 184, 231
Ephyra omicronaria 148
„ punctaria and E. pendularia, notes on 125
Epione vespertaria at Waltham Cross 286
Epunda lutulenta 281
„ nigra at Newton Abbot 278
Epping Forest, recovery of 1, 36
Erebia Ligea at Margate 198
Eremobia ochroleuca in Cambridgeshire 282
Eubolia peribolata, description of the larva of 107
Eupithecia consignata at Cambridge 132
„ extensaria taken in Yorkshire 108, 132, 133
„ Knautiata of Gregson 22, 38, 87, 133, 199
„ minutata larvæ feeding on Achillea millefolium 109
„ togata, description of the larva of 297
Eurytomidæ 15
Euthemonia russula reared from the egg 227

Fells, over the, in summer 82
Flea attached to the neck of a fowl 213
Fleas in rabbit's ears 119, 120
Flies sticking to glass 234
Flowers, fertilization of by insects 72
Fidonia atomaria 21
Fireflies 188
Food, difficulty of procuring for young larvæ when hatched 91
Food-plant of Gonepteryx Rhamni 141, 160, 231, 302; of Phigalia pilosaria 161; of Setina irrorella 234, 302
Fowl, flea attached to the neck of a 213
Fungus, Curculio attacked by a 214

Gall, name of 144; bramble *id.*; singular 167; on Hypochœris radicata 233; on Potentilla reptans 236; on Hieracium umbellatum 299
Gall-flies, breeding of 170
Glæa erythrocephala at Wells 278
Glass, flies sticking to 234
Gonepteryx Rhamni, food-plants of 141, 160, 231, 302
Grapholita grandævana 41
Gray, Dr., death of 93
Gryllus viridissimus 231

Habits of social Hymenoptera 70
Hadena peregrina at Kingston, Surrey 229 (an error, *read* Proteus 283)
„ satura in Kent 229
Haggerston Entomological Society 239, 288

Hair-worm 188
Halias prasinana 174; sound produced by 213
Heliophobus popularis at Horley 237
Heliothis Scutosa 42
Hemiptera of the Mediterranean 59
Hepialus sylvinus, larva of 225
Hibernia defoliaria, variety of 62
Hieracium umbellatum, gall on 299
Hydrœcia Petasitis 195; description of the larva of *id.*
Hylesinus Fraxini 186
Hymenoptera, Indian 62, 119; social, habits of 70; in 1874, scarce at Norwich 112; on capturing, killing, and setting 256
Hypochœris radicata, gall on 233

Idarnes orientalis 17
Insect, name of 89
Insects, list of the best taken at Whittlesford during the past season 52; fertilization of flowers by 72; New Forest 106; of Kerguelen's Island 210, 212; effect of acids on 236
Iodes vernaria 173
Isanisa decatomoides 16

Julus sabulosus 114

Knautia or Scabiosa 163

Larva of Noctua baja, description of 55; of Notodonta cucullina, description of 56; of Eubolia peribolata, description of 107; of Coremia quadrifasciata, description of 109; of Apatura Iris 160; of Phigalia pilosaria, description of 162; of Pterophorus rhododactylus 183; of Cleora glabraria, description of 193; of Emmelesia decolorata, description of 194; of Hydrœcia Petasitis, description of 195; living, in Andrena Trimmerana 213; of Hepialus sylvinus 225; of Acronycta Alni 285; of Eupithecia togata, description of 295
Larvæ, abundance of, near Plymouth in June, 1872 12; of Bombyx Pernyi 21; of a Mantis 62; young, difficulty of procuring food for when hatched 91; of Eupithecia minutata feeding on Achillea millefolium 109; feeding on turnip-seed 113; of Cirrœdia xerampelina 135; of Xylophasia scolopacina 163, 199; of Lithosia complana, depraved taste of 198; duplicate descriptions of 285
Leeds Naturalists' Field Club, and Scientific Association 288
Lepidoptera, captures of, in 1874 19; rare British 45; rare, near Limerick 89; forcing the emergence of from the chrysalis 91; at Rannoch 181; taken at South Shields 196; captures of 219; captive, obtaining eggs from 268; near Folkestone 300
Lepidopterous and Coleopterous larva, distinction of the 303
Lepismodes inquilinus 91, 120, 142, 190
Letters, printers' wooden, perforated 46
Leucania albipuncta at West Wickham 228; at St. Leonard's-on-Sea *id.*
,, unipuncta or extranea at Lyndhurst 110, 134; whereabouts of the specimen of 228
Leucophasia Sinapis 21, 37, 54
Life-histories of saw-flies 5, 26, 49, 76, 123
Life-history of Acidalia emarginata 180; of the pear-tree slug 258
Ligdia adustata 174
Lipura corticina 190
Lithosia complana, depraved taste of larvæ 198
,, quadra at Redcar 199; in Yorkshire *id.*
Localities and collectors 139
Locusts, plague of in America 150, 175, 200; American, and army-worm 215
Luminous centipede 115
Lycæna Acis near Cardiff 161, 271
,, Alsus 132
,, Arion near Kingsbridge 222
,, Icarus, hemigynous specimen of 237
,, Phlæas, variety of 86
Lyndhurst, the season at 134

Macaria alternata at Christchurch 278

Macro-Lepidoptera inhabiting Guernsey and Sark, additions to the list of 29
Mangold-wurzel, beetle destructive to 135
Mantis, larva of a 62
Melanippe montanata 149
  ,, procellata 218
  ,, rivata 149
  ,, tristata? 141
Micranisa 18
Micro-Lepidoptera taken or reared in 1874 80
Millière's Work 287
Moth, winter, attracted by gas-lamps 62; name of 143, 232; with perforating maxillæ 286
Moths, sugaring for 58, 88, 106, 180; at Coneasters 164; visitors to the trees sugared for 165
Musca pluvialis 235

Names, English 285
Nematus abbreviatus 49
  ,, appendiculatus 76
  ,, Solea 79
Neuroptera, collection of, from Yokohama 211
Neuropteron, new, from Swan River *id.*
Noctua baja, description of the larva of 55
  ,, glareosa, variety of 118
Nonagria brevilinea 41
Notes from Witherslack, near Grange 105; on Ephyra punctaria and E. pendularia 125; on oviposition 130, 147, 172, 217
Notodonta cucullina, description of the larva of 56
  ,, palpina, variety of 199

Oak-galls, British 59; descriptions of 73, 97, 121, 145, 169, 254, 289
Ophiodes lunaris in Sussex 164
Ornithoptera, new species of 207; from Cochin 214
Osmia nesting in a lock 214
Oviposition, notes on 130, 147, 172, 217
Ox-beef, Entozoa in 239

Papilio Machaon, are there two broods of in a season? 301
Parasites, descriptions of new genera and species of, belonging to the families Proctotrupidæ and Chalcididæ, which attack insects destructive to the fig in India 15
Parasitic Coleoptera, &c. 214
Passalus, Chekanops under the elytra of a 211
Pear-tree slug 258, 284
Pears, fallen 167, 189
Phigalia pilosaria—does it feed on anything but oak? 142; food-plant of 161; description of the larva of 162
Phoxopteryx paludana 231
Phycis Davisellus 41
Phylloxera plague, explanation of 57; of the vine 63
  ,, Vastatrix in Switzerland 59
Pieris Napæ, pupæ of required 120
Plague of locusts in America 150, 175, 200
Plusia interrogationis 199
Podura found on snow 213
Polanisa lutea 18
Polistes gallicus utilizing play-bills in the construction of its cells 118
Polydrosus sericeus 165
Potato-beetle, Colorado 209
Potentilla reptans, gall on 236
Prionidæ 60
Proceedings of the Entomological Society 45, 59, 118, 190, 207
Pselaphidæ and Scydmænidæ from Australia 46
Pseudisa smieroides 15
Pterophorus rhododactylus, larva of 183
Pupa, protective colouring in 47
Pupæ of Pieris Napæ required 120; female, of Bombyx Quercus attractive to males 227
Pyrarga Egeria, scarcity of 20

Quercus Phellos, Cynips lignicola on 4

Roslerstammia pronubella at Salcombe 55
Rumia cratægata 147

Sallows, doings at 99
Sarrothripa Revayana 200
Sarrothripus Revayanus at Killarney 55

Sawflies, life-histories of 5, 26, 49, 76, 123
Scotosia dubitata 130
„ undulata 218
Scydmænidæ and Pselaphidæ from Australia 46
Selenia illunaria 130
„ lunaria 172
Setina irrorella, food-plant of 234, 302
Slug, pear-tree 284; life-history of the 258
Smerinthus Tiliæ, variety of 193
South London Entomological Society 24, 239
Sphinges, Boisduval's 190
Sphinx Convolvuli at Darlington 222; in the North of Ireland *id.*; at Bristol *id.*; at Witham 223; at Hawley *id.*: at Gravesend *id.*; at Huddersfield *id.*; at Hammersmith *id.*; near South Hackney *id.*; at Barrow-on-Trent 224; at Eastbourne *id.*; in Dublin *id.*; at Cullercoats *id.*; at Tottenham *id.*; near Stoke Newington *id.*; near Newton Abbot *id.*; at Maidstone 225; at Bowdon 239; near Petersfield 270; near Birmingham *id.*; at Hitchin *id.*; at Hendon 271; at Ipswich *id.*; in Guernsey *id.*; description of the larva of 272; abundance of 275; at Maldon 276; at Winchmore Hill *id.*; in the West of Scotland *id.*; at Hazeleigh, Essex *id.*; at Hastings *id.*; at Sheffield 277; at Leeds *id.*; at Darlington *id.*; at Birkenhead *id.*; at Lincoln *id.*; at Croydon *id.*; at Norwich *id.*; at Peckham 278; at Christchurch *id.*; at Newton Abbot *id.*; at Wells *id.*; at Newport, Isle of Wight 300
Spider, remarkable 249; trap-door, a new genus and species of from South Africa 252
Spider's nest, drawing of a 48
Spiders, trap-door, in the bark of trees 215, 241
Spilodes palealis 181; in Norfolk 229; at Brockley 230
Strenia clathrata, variety of 119
Stylops taken in Andrena atriceps 210
Sugar, captures at 281
Sugaring for moths 58, 88, 106, 180
Sugaring, recreations of a country doctor concerning 294
Sycophagoidæ 16
Tea, beetles in 43, 59
Tenthredo Cratægi 117; cocoon of 143
Terias, remarks on the genus 191
Tester, Mr. Charles, death of 288
Thera variata 237
Tryphæna interjecta 199
„ subsequa at Redcar *id.*
Turnip-seed, larvæ feeding on 113

Urapteryx sambucata 217

Valeria oleagina in Hertfordshire 164
Vanessa Antiopa near Ashford 197; near Wells *id.*; at Chertsey *id.*; at Edlington, near Doncaster 219; in Norfolk 220; in Ireland *id.*; near Berkeley Road Station *id.*; near Norwich 283
„ Atalanta 131
„ Urticæ in 1874 20
Variety of Lycæna Phlæas 86; of Noctua glareosa 118; of Strenia clathrata 119; of Clostera curtula 134; of Bombyx Quercus 161; of Smerinthus Tiliæ 193; of Notodonta palpina 199; of Cirrœdia xerampelina 238
Varieties of Diloba cæruleocephala and Hybernia defoliaria 62; and deformities 268
Venilia maculata 148
Visitors to the trees sugared for moths 165

Wasp, name of a 118
Wasps, paucity of 296
West London Entomological Society 287
Worm, army, and American locusts 215

Xanthia aurago 281; near Willesden 282
Xylina petrificata at Newton Abbot 278
„ rhizolitha 131
Xylomiges conspicillaris at Dartford 135
Xylophasia scolopacina in Yorkshire 199; larvæ of *id.*

Zygæna Filipendulæ, note on 21
„ Meliloti 211
„ Trifolii *id.*

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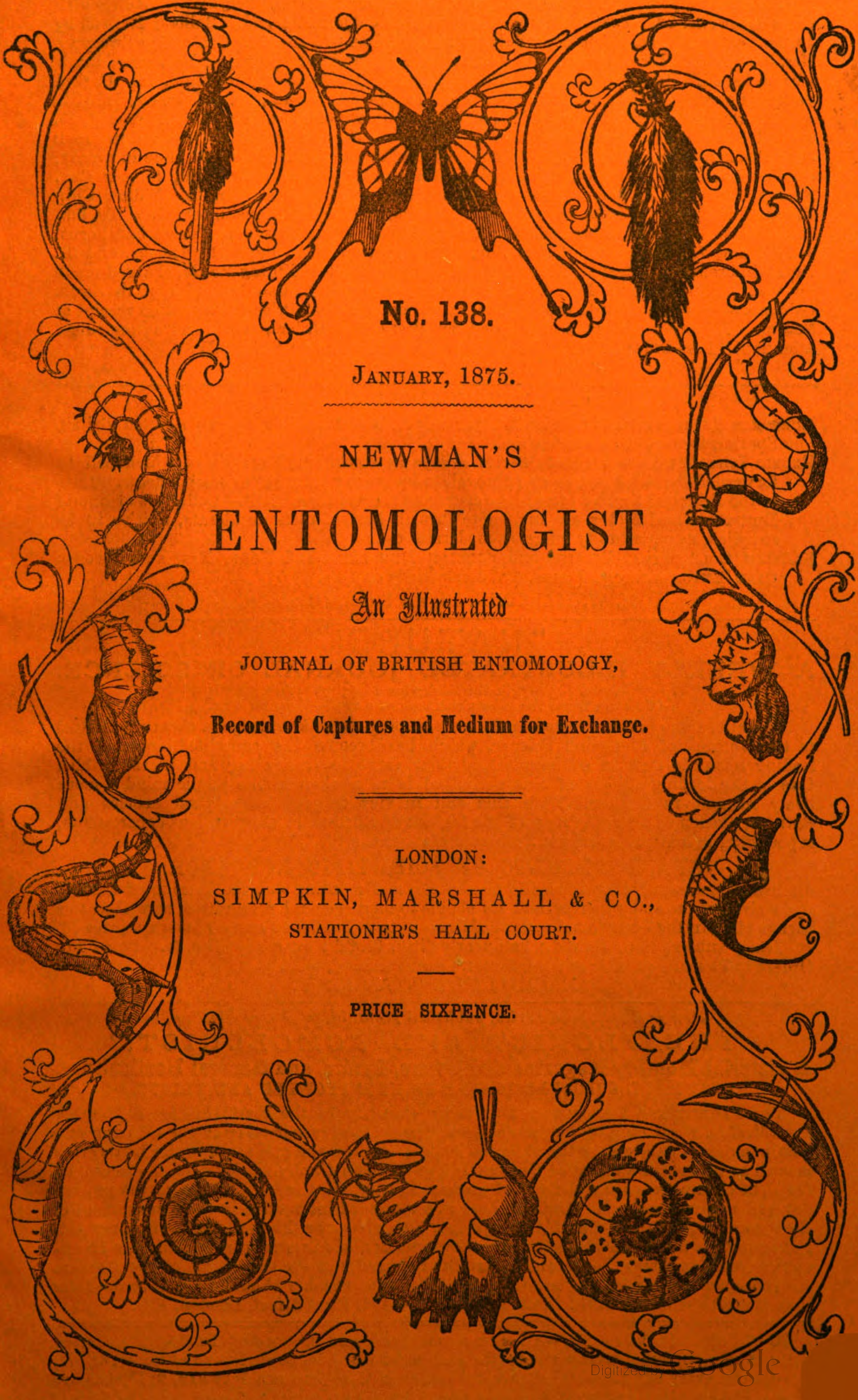

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THE ENTOMOLOGIST.

No. 138.] JANUARY, MDCCCLXXV. [Price 6d.

Recovery of Epping Forest.

At a late meeting of the Coal, Corn and Finance Committee of the Corporation of London, Mr. R. Cox, Chairman of the Committee, presented a report of the judgment of the Master of the Rolls in the suit instituted by the City Commissioners of Sewers against all the lords of manors of Epping Forest. It was received with cheers.

Mr. J. T. Bedford, a leading member of the Court, addressing the Lord Mayor, said, as he had been looking forward to that day for the last two years, he might be allowed to inform the Court what the Corporation had actually done in this matter. In May, 1871, the Corporation, on his motion, unanimously agreed, at any cost, to try by all legal means to preserve Epping Forest for ever as a recreation ground for the people. His committee had an interview with the Government, and were referred to Mr. Ayrton, who showed them a Bill he had prepared, appointing a Commission to prepare a scheme for preserving the Forest. He [Mr. Bedford] suggested the propriety of introducing a clause preventing further enclosures or waste until the commission had reported. This Mr. Ayrton flatly refused to do. The Bill was passed, and Parliament rose for the recess. Meanwhile, in August, the Corporation filed their first Bill in Chancery, and then the vacation stopped further progress. Directly it was discovered that the Bill contained no clause preventing further enclosures, the lords of the manor went to work with a will, and recommenced felling timber, building houses, cutting turf, and even ploughing up some of the most beautiful parts of the Forest. Then the Corporation set to work with its customary vigour, and, although it was vacation time, they found a Vice-Chancellor, fetched up to town a Registrar from his sea-side holiday, obtained an injunction, and thereby stopped further proceedings for that year. In the meantime the old Forest Court of Verderers had been assembled, and he had the pleasure of listening to nearly a hundred presentments of illegal enclosures, ranging from one acre by a right reverend prelate, to a hundred acres enclosed by the clergyman of the parish,—the shepherd of the flock,—who, in a sermon preached by him a few days afterwards, actually took for his text—"The love of money is the root of all evil." There was also a case of enclosing five hundred and seventy acres by a noble earl, whose agent afterwards indignantly denied the charge, saying he had only enclosed five hundred and sixty-three, and left seven for the people. A gallant admiral had likewise marked one thousand one hundred and thirty trees to be felled at High Beach, the most beautiful part of the whole Forest. In 1872 the Corporation Bill came on in Chancery, and their usual leading counsel was taken away from them on the ground that, being a Q.C., he was at the call of the Crown when it chose to exercise its right. The result was that he appeared against them, and took the only objection on demurrer that was fatal to the Corporation Bill, and they had to pay about £580 in costs. Nothing daunted they began again, the Government charging them with double costs. In the meantime a second Bill was introduced into Parliament by the Government, remedying the former defect, and empowering the Commissioners to issue orders preventing further enclosures. That was introduced into the House of Lords, but, thanks to Lord Salisbury, a clause staying all legal proceedings was altered, so as to make the case of the Corporation an exception. Meanwhile the second Bill of the Corporation in Chancery came on for hearing, and was again opposed on demurrer; but they were successful on that occasion, and an appeal to the Lords Justices failed to alter the decision. The legal cobwebs being now swept away, their cause stood ready for argument. When Parliament rose the agents of the lords of the manor discovered that, although the Commission had power to issue orders forbidding further enclosures and waste, it had no power to enforce them. Again the Corporation came to the rescue, and in no less than fourteen different cases—by threat, or remonstrance, or by legal process—succeeded in preventing fearful waste and damage. By that time many important public meetings were held, in which the services of the Corporation were most gratefully and enthusiastically recognized, and at one of which they were denounced, in a letter by Mr. Ayrton, as intriguers,—a term he might as well have applied to the Good Samaritan. Their cause at length came on for hearing; and after twenty-two days of patient and unwearied attention, by the most learned Judge who presided in the Rolls Court, the judgment was delivered, with which the Common Council and the public were now familiar, giving the Corporation, in fact, all they ever asked, and preserving five thousand acres of the Forest for ever for the enjoyment of the people. That old Corporation of London had done many a good deed in the course of its long existence, but he believed it never did a wiser, a more generous, or a more disinterested and patriotic act than when it resolved, at any cost, to preserve that beautiful Forest for the healthful enjoyment of the community at large for all time.

The speech of Mr. Bedford was received with marked approbation; and subsequently, on the afternoon of Saturday, the 28th of November, 1874, the Corporation of London, as represented chiefly by members of the Corn, Coal, and Finance Committee, celebrated—by a tour of the Forest, and a dinner at the Castle Hotel, Woodford—what Mr. Richard Cox, presiding at the dinner, declared to be "one of the best and greatest victories ever achieved by the Corporation,"—to wit, the deliverance of Epping Forest from the encroachments of the lords of the manor.

It will be observed that this event—I mean this triumphal visit to the recovered Forest—took place on the very day on which the last number of the 'Entomologist' was issued, and that thus a notice of these proceedings was excluded from its pages. The proper time has now arrived for me to recur to the important fact that, when the subject of encroachment was first under discussion, the members of the HAGGERSTON ENTOMOLOGICAL SOCIETY were the only entomologists in Britain who raised a finger, who entered the slightest protest, against the hateful enclosures then in progress.

I regret to say the people generally did not then take, and have not since taken, the decided part they ought to have done in resisting the aggression. They have held a few meetings, certainly; but for the most part have submissively allowed the depredator to enter and despoil their property. This should not have been so. Englishmen should have some feeling of a community of interest in property bequeathed to them by their ancestors, and of which they had held undisturbed possession from time immemorial: they ought to stand shoulder to shoulder in defence of their common right. It were a cowardly and contemptible policy to argue—"This is no business of mine; the injury is done to thousands of others quite as much as to me; I am but an individual; single-handed I am impotent against the overwhelming influence of wealth." Such were the arguments advanced in defence of apathy and indifference. I fear we are a degenerating, an ease-loving people. I see Germans, Russians, French, Americans, going ahead of us—in arts, manufactures, and commerce—all the world over. We want self-respect, self-reliance, tenacity and unity of purpose. The man who will sit by with folded hands while his wealthier neighbour runs a fence across his potato plot, or the common where his horse or his cow feeds, is not likely to resist, or even to object, when a more powerful neighbour seeks, in the lust of conquest, to annex his country.

But there is another point for me to notice; and I must render honour where honour is due. The Corporation of London has too long, perhaps undeservedly, been regarded as an organization for eating and drinking, and taxing its fellow-citizens. It has now nobly redeemed its character. If these charges were ever true, they are true no longer. The Corporation now stands forth as the Protector of the People's property, and will be honoured hereafter by all good and just men.

EDWARD NEWMAN.

Cynips lignicola on Quercus Phellos.—I have frequently noticed the Devonshire gall on a willow-leaved oak (Quercus Phellos) at Southgate, which, as the tree is rather scarce, may not have been remarked elsewhere. It is singular that the insect should recognize in this tree, so different in appearance from others of the same genus, a fitting place for the growth of the future gall.—*Fredc. Walker; Oakley House, Abingdon.*

Life-histories of Sawflies. Translated from the Dutch of M. S. C. Snellen van Vollenhoven by J. W. May, Esq.

(Continued from vol. vii. p. 271.)

Cimbex Lucorum, *L.*

Imago: Linn. S. Nat. 12 ed., No. 1527; Fabr. Ent. Syst. ii. 105, No. 2; Klug. Vers. Cimb. p. 85, No. 4; *Hartig, Blatt-und Holzwespen*, p. 68, No. 3.

Larva: Brischke und Zaddach in Schrift d. K. Phys. Oekon. Gesells. zu Königsb. iii. p. 257, No. 7; pl. ii. fig. 7.

Cimbex nigra fusco villosa, antennis rufo annulatis, tibiis tarsisque fulvis.

I have at last succeeded in rearing the larva of Cimbex Lucorum. It may, perhaps, be remembered that in the year 1843 I published, in the 'Tijdschrift voor natruulijke Geschiedenis en Physiologie' of Messrs. Van der Hoeven and De Vriese, a paper on the larva of Cimbex Lucorum, and that some years later I explained, in the second volume of this publication ('Tijdschrift voor Entomologie'), that I had been mistaken in the name. I have since reared many species of the same genus, some of which have been figured and described, but I had not succeeded in obtaining the species, whose name I had misapplied, until last year, when the larva was sent to me from Gelderland. It is again to my friend, De Roo van Westmaas, that I am indebted for my acquaintance with this larva. At the end of June, 1867, he kindly sent to me two young larvæ, taken near Velp on birch. In colour and appearance they exactly resembled the larva of Betuleti (see vol. ii. pl. 3, fig. 1); but as the latter feeds exclusively on hawthorn,—and I had learned from the paper of Prof. Zaddach, referred to at the head of this description, that Cimbex Lucorum fed on the birch,—I determined to wait and see whether a subsequent moult would reveal any difference between it and the species I had already described; and this proved to be the case. After the last moult a considerable difference was observable: the larva was paler, and of a more bluish green than that of Betuleti; the skin was smoother, and not so thickly granulated with white points; the shape, and colour, of the spot on the head was different;

and the stigmata (fig. 3) were elliptical, with a slight undulation of the sides. Although there was no difference in the shape of the head of my two larvæ, the ground tone of the colour was different, as was also the appearance of the pale, sepia-coloured spot on the vertex. In one the colour was faint reddish yellow, with two wedge-shaped transverse spots separate from each other; in the other the head was yellow, of the colour of wax, with a large transverse spot on the vertex, terminating in a point at either end. In both, the eyes, which were small, were placed in very deep black round spots. The head of the first-named species is represented at fig. 2.

Fig. 1 was drawn about a week too soon, as the larva was not then full grown. They grow nearly to the size of fig. 2, on plate 3 of the second volume, and then the little wart-like eminences on the sides are more projecting, and are of a still paler tint. Further, it will be hardly necessary to add that the larva had twenty-two legs, but it is worthy of record that the claws of the anterior legs were black.

I have not been able to observe that the larvæ in question had the faculty of ejecting fluid from their sides, as is the case with other Cimbices; I also failed to perceive any openings or valves above the stigmata: the same negative observation is made by Brischke.

On the 25th of July the larvæ began to spin up among the twigs of the birch. The cocoon (fig. 4) was hard, and of a brown colour. As I had only two cocoons I did not like to open one, and so I am unable to say anything about the pupa, which, in all probability, strongly resembles that of the so nearly allied species.

On the 9th of April of this year (1868) I found two males alive in the box in which I had kept the cocoons, from which a little round piece had been cut out in the usual way; we had had rather warm and very sunny days towards the end of March and the beginning of April.

The following is a description of these two males, one of which is represented, with the wings extended, at fig. 5; the other, at rest, at fig. 6:—

At the first glance the whole body appears to be black, but on closer examination it is seen to be of a dark, bronzy earth-colour. The head below the antennæ, the clypeus, together with the jaws, as also the eyes and ocelli during life, are shining black. The antennæ (fig. 8) are slender, and consist of six joints: the first two basal joints are short, somewhat thick and compressed together, black; the third is a little longer than the three following together, somewhat curved, black, dark red at the tip; the fourth and fifth joints are red or reddish brown, both being dilated towards the apex; while the sixth—probably formed of the sixth to the ninth anchylosed, at all events showing the suture between the sixth and the seventh—forms a black pear-shaped knob. In one of the individuals I reared, the parts of the mouth seem somewhat turned up anteriorly. The head is richly clothed with rather long black hairs, excepting below the cheeks, where yellow-gray hairs occur. The entire thorax, above and below, is covered with a similar thick gray fur. The abdomen also has a similar clothing, only thinner and more woolly. The wings are tinted with orange, and have a narrow smoke-coloured border running inwards in each cell. The main trunks of the nervures are orange; the smaller divisions and terminations, brown. The stigma is very elliptical, and brownish black. The coxæ, trochanters, and femora are shining black, but slightly punctured; the posterior femora not particularly thickened, and having merely a trace of a spinous projection. The tibiæ are of a brownish orange colour; the tarsi somewhat less brown, or more yellow, both being covered with fine hairs of a golden yellow. The inner side of the anterior tibiæ is completely covered with a close row of short bristly hairs of a golden colour. The claws are of a red-brown colour, and black at the tips. The pulvilli fuscous.

In addition to the difference in the organs of generation, the females are only distinguished from the males in having the body coarser and larger; and, on the other hand, the jaws, together with the upper lip and the spine on the posterior femora, smaller.

Cimbex Lucorum appears to be not very common with us, examples being only occasionally observed. I remember, however, having observed a considerable number of these insects some years ago in a copse, near Voorschoten, flying after each other among the fresh green leaves of the birch trees; and I fancy that anyone passing the early spring in the country might expect sometimes to meet with many individuals of this species together.

I have now described the following species of the genus Cimbex in the pages of this journal:*—C. connata, *Schr.* (vol. vii. p. 59, pl. 1 and 2); C. axillaris, *Panz.* (vol. v. p. 49, pl. 1); C. Lucorum, *L.*; C. Vitellinæ, *L.* (C. lateralis, *Leach*, vol. vi. p. 65, pl. 4); C. Betuleti, *Hart.* (called by Zaddach, C. Cratægi, vol. ii. p. 63, pl. 3); C. Amerinæ, *L.* (vol. iii. p. 104, pl. 8); and, of the very nearly-alled genus Abia, the species A. ænea, *Kl.* (A. nigricornis of Leach, vol. i. p. 144, pl. 5). There thus remain for me to describe Cimbex Saliceti, *Zadd.*, observed by Lyonet and Voet in the Netherlands; Cimbex Sorbi, *Hart.*, if the species, as I suspect, occurs in this country; together with Abia fasciata, *L.*, and Abia sericea, *L.*, of both of which the imagos have been observed here.

The Classification of the Rhynchophorous Coleoptera.

By John L. Leconte, M.D.

(Continued from vol. vii. p. 285.)

Series 2. Allogastra.

Abdomen dissimilar in the two sexes; dorsal segments, 1st to 6th, coriaceous or membranous, 7th large, corneous, undivided in the female, divided into two in the male; ventral segments prolonged upwards, forming a sharp edge, fitting into a corresponding groove on the inner face of the elytra, which are without epipleuræ. The beak and oral organs vary greatly in form, as do also the antennæ, the tarsi, the ungues, and the position of the coxæ; the 1st and 2nd ventral segments are most frequently connate, and the 3rd is always shorter than the 2nd; the 5th is longer than the 4th. The following families seem to be indicated by the material I have examined:—

A. Antennæ with a solid annulated club.
    a. Tarsi narrow.
        Gular margin very prominent; mentum retracted.
            Prosternum not excavated. - AMYCTERIDÆ.

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* 'Tijdschrift voor Entomologie.'

Prosternum excavated. - - BYRSOPIDÆ.
Gular margin not prominent; mentum large, concealing the mandibles, which are not scarred at the tip. BRACHYCERIDÆ
b. Tarsi dilated, usually with a brush of hair beneath.
Mandibles with deciduous tip, leaving a scar. - - - - - OTIORHYNCHIDÆ.
Mandibles simple, usually pincer-shaped. - - - - CURCULIONIDÆ.
B. Antennæ with eleven separate joints. - BRENTHIDÆ.

Concerning Amycteridæ and Brachyceridæ but little need be said: they are very peculiar and easily-recognized forms, not represented in our Fauna.

The first is Australian: the antennæ are slender and geniculated; the beak short and stout, deeply emarginate at tip, alike in both sexes; the buccal opening is very large, and the cavity is filled almost completely by the mandibles, which are convex, hairy on the greater part of the front surface, deflexed, deeply concave beneath; the gular margin is thickened and prominent, so that a deep cavity is seen between the gula and the mandibles, in which the mentum and oral organs are concealed from view; the eyes are small, and nearly round in some, narrowed beneath in others; the front coxæ are contiguous; the prosternum very short; the elytra are connate, and extend far over the flanks, so that the side pieces—both of the mesothorax and metathorax—are concealed; the dorsal segments of the abdomen are membranous, except the last, which is very large, corneous, and convex, more so in the male than in the female,—in the former it is truncate behind, exposing a semicircular 8th segment, from under which protrudes (Psalidura) a very powerful and complex genital armature, consisting of a large pair of forceps, conical-obtuse, punctured, and hairy, under which, and seen only from below, is a pair of transverse, thin, polished, corneous plates, also meeting on the median line; between them and the forceps is a large deep cavity; the ventral segments are scarcely less singular; the 1st and 2nd segments large, flat, connate, united by a sinuate suture; 3rd and 4th very short, separated by deeply-excavated straight sutures; 5th much larger; in the male very deeply and semicircularly excavated, almost to the base, with a tuft of stiff bristles each side at the front edge of the excavation; in the female this segment is flat, and meets the last dorsal at tip in the usual manner; on the sides the lateral upward extension of the 5th ventral is very large, but the spiracle is visible; the extension of the 4th and 3rd segments are much smaller, and imbricated upon the 5th and 4th respectively; the side margin of the 1st and 2nd is very narrow, and the side pieces of the metasternum are scarcely visible; the elytra are connate, with the lateral groove of the inner face narrow and sharply defined, becoming broader and indefinite at the posterior 4th; on the inner face are seen eight rows of punctures, corresponding to ridges of tubercles on the back; the tarsi are 4-jointed, narrow, or at least the third joint not wider than the others, deeply grooved beneath; the tibiæ are truncate, without spurs, the front pair a little incurved at tip in both sexes; claws simple, not contiguous. The genera of this family are stated by Mr. Jekel* to differ by the form of the eyes, some being Cyclophthalmes, others Oxyophthalmes; also, in the antennal grooves, some being Obliquiscrobes, others Lateriscrobes. The vestiture of the under surface of the tarsi varies in different genera: in Psalidura they are spongy sericeous beneath; in others, ciliate or spinous. In other genera the sexual characters are less remarkable than in Psalidura, and will be found to consist chiefly in the division of the last dorsal segment into two, as in the other families of the series.

The Brachyceridæ are restricted to Africa and the neighbouring parts of Europe and Asia: they are stout insects, with ventricose elytra, suddenly deflexed behind, and extending far upon the flanks, like the first tribes of Tenebrionidæ, which they also resemble in the large mentum, flat, filling the whole of the buccal cavity; the beak is short and stout, thicker at the extremity, alike in both sexes; the antennal grooves are wanting (Episus), or deep and directed downwards, almost confluent in the gular region (Brachycerus, Microcerus); the antennæ are short, straight, or feebly geniculate, scape forming less than one-third the length; joints of the funiculus seven, rather short; club solid, obconical, truncate or subacuminate at tip; eyes rounded or

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* Ann. Ent. Soc. France, 1864, 544.

transverse, and acuminate at the lower end; mandibles stout, short, more prominent in Brachycerus, where they have the lower margin more produced into a cutting edge; the front surface is rough and somewhat angular, but without any trace of the rounded scar seen in Otiorhynchidæ; the scutellum is scarcely visible; the elytra, as above mentioned, are ventricose, irregularly tuberculate or costate, very much extended on the flanks, so as to cover the side pieces of the mesothorax and metathorax, greatly deflexed behind; the lateral groove of the inner face is deep and narrow, becoming wider and obsolete behind; the dorsal segments are membranous, except the last, which is corneous, and divided in the male into two, as in Curculionidæ; the ventral segments are separated by deep sutures, of which the first is sinuate; the 3rd and 4th segments are shorter than the others; the lateral extension upwards is narrow, and but slightly wider behind; the front coxæ are contiguous, prominent, and subconical; the tibiæ are not dilated; the spurs are small, fixed, projecting inwards; the tarsi 4-jointed, narrow, setose, and feebly concave beneath (Brachycerus); pubescent, concave, and emarginate beneath (Microcerus); claws large, simple, distant.

BYRSOPIDÆ.

The third of the anomalous families has a more general distribution, and is represented in our Fauna by the genus Thecesternus, which forms a separate tribe, distinguished from the other tribes by the prosternal groove for the reception of the beak, not extended as far as the front coxæ. These insects are epigeal, rough, and dull coloured, with the elytra widely embracing the flanks, but not strongly deflexed behind, concealing the side pieces of the trunk; the beak is very short, not thickened at tip, nor emarginate at the middle; the antennal grooves descend perpendicularly, and form a gular constriction; the antennæ are unusually short, imperfectly geniculate; the scape as long as the first and second joints of the funiculus; the club elongate-oval, pointed, distinctly annulated; eyes transverse, pointed beneath;* mandibles stout, short, front surface curved and

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* Jekel, l. c. 1864, 543, describes the group as being Adelognathes cyclophthalmes. Lacordaire (Gen. Col. vi. 293 sqq.) places them in Phanerognathes, and describes the eyes as acuminate below, in which he is correct.

roughly punctured; mentum very small, not placed on a gular peduncle; maxillæ exposed; prothorax widely lobed in front at the sides, so as to conceal the eyes when the head is deflexed, deeply excavated beneath for the reception of the beak; cavity closed behind in Thecesternus by a triangular plate of the prosternum, but by the front coxæ in the other genera; coxæ small, globose, contiguous; elytra connate, widely extended on the flanks, declivous behind, rough; lateral groove of inner face narrow and well defined; scutellum not visible; humeri in Thecesternus prolonged forwards, so as to extend along the sides of the prothorax; dorsal segments membranous, last one large, corneous, divided into two in the male; ventral segments unequal; 1st and 2nd very large, more closely connected, suture arcuated; 3rd and 4th short, sutures deep; 5th as long as the two preceding; lateral extension moderately wide, wider behind; pygidium articulating with both 4th and 5th ventrals; legs slender; tibiæ truncate; spurs small; tarsi 4-jointed, narrow, setose beneath. Several species of Thecesternus are found in the interior regions of the continent, from Illinois to Utah, under dried buffalo excrement, and similar objects.

JOHN L. LECONTE.

Abundance of Larvæ near Plymouth in June, 1872. By GERVASE F. MATHEW, Esq., R.N., F.L.S.

A FEW days before I left Plymouth, in 1872, I went with my friends, Messrs. Bignell, Bishop, Gatcombe, and Jones, for a farewell entomological ramble in the woods in the neighbourhood of Bickleigh Vale; and, as I have seen no account of this day's expedition in the 'Entomologist,' I send it to you now, in the hope that it may be interesting to some of your readers at this time of the year, when so little out-door work is doing.

The 28th of June, 1872, was a delightful day in every respect,—bright, warm, and fresh,—one of those days we so often get in Devonshire at that time of the year, when everything looks joyous, and all living creatures seem to possess twice the amount of vitality they usually have. We left

Plymouth by an early afternoon train, and soon found ourselves at Bickleigh Station, from whence we descended to the valley below, crossed the river Plym, and walked up the hill on the other side towards the Caun Quarry Woods,—the locality we had previously fixed on for beating for larvæ, which were to be the chief object of our pursuit. On our way we turned our attention to the hedges on each side of us, and many common species of Geometræ were soon dislodged, Larentia pectinitaria being perhaps the most abundant: what a pest this is when one is mothing at dusk; I have often filled a dozen boxes or more with them, thinking they were something else. It is, however, a very pretty moth, and how nearly it resembles a piece of lichen as it sits with expanded wings on a block of moss-covered granite. A little distance further up the hill we came to a small patch of waste ground, where a few stunted sloe-bushes grew, and these were beaten in the hopes of obtaining larvæ of Thecla Betulæ, but none were found, as it was rather too late in the year for them, and the same bushes had been tried by one of our party only a few days before, and three or four larvæ taken. Presently a strange-looking moth responded to the rattle of my stick, flew across the road, and settled in the opposite hedge. I walked carefully towards it, and then saw for the first time alive a beautiful specimen of Eurymene dolobraria: it was a female, and was soon boxed, and I was much pleased to make its acquaintance. Subsequently it laid some eggs, which, on leaving Plymouth, I turned over to my friend Mr. Bignell, but I have not heard whether he succeeded in rearing any of them. Just before we reached the woods we had to cross a small extent of heathy ground, and here Bombyx Rubi was flying about freely in its usual headlong manner, and we certainly thought it was rather late in the season to find this species still on the wing. The woods, at the point where we entered them, were composed chiefly of young pollard oaks of about six or seven years' growth, with here and there a few birch and buckthorn bushes, and, in the whole course of my entomological career, I never saw such a sight as presented itself to our astonished gaze when we first plunged into this wood. In many places large patches of oaks were literally stripped of every leaf, and innumerable larvæ were to be seen wandering over the branches in search of food. If we stood still and listened we could plainly hear the jaws of this countless host at work as they were ravenously feeding, and their frass dropping on the dead leaves below sounded like falling hail. We soon commenced beating, but it was fearful work, every blow of the stick actually bringing quarts of larvæ into our calico-trays (a most ingenious invention of Mr. Bignell's), and as we walked we could not avoid treading on larvæ which were crawling on the ground, besides which we were soon covered with them ourselves. The four most abundant species which were causing all this destruction were Tæniocampa stabilis, Hybernia defoliaria, Oporabia diluta, and Cheimatobia brumata; but occasionally we got something better, for in a little while Mr. Bignell's cheery voice rang out with—"Hullo, here's something good! Surely not Chaonia? Yes, it is, though; and a beauty, too!" This raised our hopes and strengthened our arms, and the bushes were thwacked more vigorously than before; and presently Mr. Gatcombe exclaimed he had a lovely Ridens; and I quite agree with him, for it is a handsome larva: I afterwards took one or two crawling about the bare branches in a most forlorn manner, as they had evidently been eaten out of house and home. We continued beating and had very good luck, obtaining about three dozen each of Notodonta chaonia and Cymatophora ridens; and, in addition to these, we also captured larvæ of Thecla Quercus, Demas Coryli, Tæniocampa miniosa, Hoporina croceago, Himera pennaria, Crocallis elinguaria, and a great many other common species, and a few that were unknown to us; and returned to Plymouth in the evening, much pleased with our day's outing. I have often remembered this delightful day when I was many thousands of miles away in the Pacific.

Mr. Bignell has since informed me that larvæ were almost equally abundant in the same locality last year.

GERVASE F. MATHEW.

H.M.S. "Britannia;" Dartmouth,
November 13, 1874.

Descriptions of New Genera and Species of Parasites, belonging to the Families Proctotrupidæ and Chalcididæ, which attack Insects destructive to the Fig in India. By the late FRANCIS WALKER, Esq.

[Communicated by F. SMITH, Esq.]

Genus PSEUDISA, n., *Walker*. Fam. DRYINOIDÆ?

Body convex. Head and thorax very finely squamous. Head large, transverse, subquadrate, a little broader than the thorax; front perpendicular. Mandibles very short. Eyes large. Ocelli three, in a curved line on the vertex. Antennæ pubescent, filiform, 12-jointed, shorter than the thorax; first joint long, stout; second elongate-cyathiform; third and fourth extremely short; fifth and four following long, linear, equal; tenth, eleventh and twelfth forming a fusiform club, which is a little less than twice the length of the ninth. Prothorax large, quadrate. Mesothorax well developed; sutures of the parapsides distinct, converging hindward; scutellum with a slight longitudinal furrow. Metathorax large, tapering. Petiole slender, cylindrical, about two thirds of the length of the abdomen. Abdomen smooth, compressed, with four nearly equal segments; tip obtuse in the male, aculeiform in the female. Legs stout, setose; femora incrassated; tibiæ curved; tarsi 5-jointed; claws moderately long. Fore wings moderately broad, with a setose subcostal vein proceeding from the base to a large stigma, which emits a short branch or cubitus.

PSEUDIA SMICROIDES.

Luteous, with some black marks, which vary in number, and occasionally are wholly wanting. Wings cinereous-hyaline; subcostal vein tawny; stigma black. Length of the body 1½—3 lines. One specimen, which is much larger than the other, has a ferruginous stigma. Thirty-six specimens.

The number of specimens of this species indicate that it is especially an agent in caprification. It may deposit its eggs in some larvæ that feed within the fig, near the surface. It is very different from all genera hitherto described.

Genus ISANISA, n., *Walker*. Fam. EURYTOMIDÆ.

Body convex. Head and thorax very finely squamous. Head transverse, subquadrate, as broad as the thorax. Parts of the mouth very small. Antennæ subclavate, 11-jointed, not longer than the thorax; first joint long, slender; second cyathiform; third very minute; fourth to eighth successively decreasing in length; club fusiform, a little broader than the eighth joint, and more than twice its length. Prothorax elongate, well developed. Mesothorax with the sutures of the parapsides distinct. Petiole about one-sixth of the length of the abdomen. Abdomen smooth, slightly compressed, with four distinct segments. Oviduct springing from the base of the abdomen, and extending just beyond its tip. Fore wings moderately broad; humerus extending to a costal stigma; no ulna nor radius.

ISANISA DECATOMOIDES.

Luteous, with the abdomen more or less piceous, or with the body wholly piceous. Wings cinereous-hyaline. Fore wings with a black stigma, and with a large brown spot in the disk adjoining the stigma. Length of the body 2 lines. Eight specimens.

The mimicry of this species with regard to the preceding one is probably subservient to its habits or economy. The larvæ on which it is parasitic probably live within the fig, near the surface.

Genus AGRIANISA, n., *Walker*. Fam. SYCOPHAGOIDÆ.

Body slender, flat, smooth. Head horizontal, oblong-quadrate, more than half the length of the thorax. Eyes narrow, lateral. Ocelli three, in a triangle on the hind part of the head. Mouth setose. Mandibles curved, falcate, very long, crossing in front of the head. Antennæ clavate, 11-jointed, a little longer than the head; first joint long, stout; second clavate; third to eighth short, successively decreasing in length; club fusiform, 3-jointed, as long as the four preceding joints. Prothorax very long, tapering in front. Mesothorax with the sutures of the parapsides distinct, converging hindward; paraptera large; scutellum rather small. Metathorax long, subquadrate. Petiole extremely developed, longer than the metathorax. Abdomen oval; first segment a little shorter than the four following together. Oviduct tubuliform, as long as the first segment. Fore legs slender; posterior legs incrassated; tarsi 5-jointed; claws distinct. Fore wings narrow; ulna about one-sixth of the length of the humerus; cubitus curved, much shorter than the ulna; no stigma; radius rudimentary.

AGRIANISA MYRMECOIDES.

Luteous; wings pellucid; veins luteous. Length of the body 2—3 lines. Four specimens.

This genus differs much in structure from Agaon, Blastophaga, and Sycophaga, the other described genera of the family. It has some resemblance to the genus Bethyllus, and to the Formicidæ.

IDARNES ORIENTALIS, *Walker*.

Female.—Metallic-green, slender. Head and thorax very finely squamous. Head transverse; face perpendicular. Trophi small. Antennæ inserted in the middle of the front, 10-jointed, piceous, clavate, nearly as long as the thorax; first joint pale yellow, long, slender; second cyathiform; third to seventh transverse; club fusiform, a little broader than the seventh joint, and full twice its length. Thorax not much developed. Prothorax and metathorax less developed than the mesothorax. Abdomen smooth, lanceolate, much longer than the thorax, pale yellow beneath towards the base. Oviduct tawny, about thrice the length of the body, slightly incrassated at the tip, which is black. Legs slender, pale yellow; tarsi 5-jointed. Wings pellucid. Fore wings narrow; veins pale luteous; ulna more than half the length of the humerus; radius a little longer than the ulna; cubitus extremely short. Length of the body ¾ line. Two specimens.

The genus Idarnes hardly belongs to the Agaonidæ. The only species hitherto described is a native of the West Indies. The long ovipositor indicates that it is parasitic on larvæ that feed quite in the interior of the fig.

Genus POLANISA, *Walker*.

Female.—Body slender, smooth. Head oblong. Trophi small. Antennæ 10-jointed(?), inserted near the mouth, nearly filiform, much shorter than the thorax; first joint long, stout; second elongate-cyathiform; third and following joints elongate, linear; club composed of three transverse joints. Prothorax very long, nearly flat. Mesothorax short. Metathorax well developed. Petiole very short. Abdomen more than twice the length of the thorax, tapering to nearly half its length, compressed and aculeiform from thence to its tip. Oviduct longer than the body, emerging from the base of the abdomen; sheaths proceeding from the apex of the abdomen, slightly incrassated. Legs moderately long; femora incrassated; tibiæ slender; tarsi 5-jointed, very long and slender. Fore wings narrow; ulna much shorter than the humerus; radius and cubitus long.

POLANISA LUTEA.

Female.—Pale luteous. Antennæ tawny; first joint pale luteous. Oviduct pale luteous; sheaths black. Wings pellucid; veins pale yellow. Length of the body 1¼ line. One specimen.

This genus, with Idarnes and Micranisa, may be said to constitute one group, though it differs from them much in structure. The form of the abdomen indicates that in the act of oviposition the apical half of it is inserted as well as the sheaths of the ovipositor.

Genus MICRANISA, *Walker*.

Body rather slender. Head and thorax very finely squamous. Head transverse, broader than the thorax. Eyes very large and prominent. Trophi very small. Antennæ 10- or 11-jointed, subclavate, shorter than the thorax. Thorax not much developed, much like that of Idarnes. Petiole very short. Abdomen smooth, compressed, longer than the thorax. Oviduct slightly exserted; sheaths not more than one-sixth of the length of the abdomen. Legs slender; tarsi 5-jointed; hind femora slightly incrassated; hind tibiæ slightly curved. Fore wings narrow; ulna much shorter than the humerus; radius more than half the length of the ulna; cubitus shorter than the radius; stigma moderately large. Metallic-green, shining. Antennæ tawny. Sheaths of the oviduct black. Legs luteous; hind femora green. Wings pellucid; veins pale yellow. Length of the body 1 line. One specimen.

The short ovipositor of this genus shows that it is not parasitic on larvæ that feed within the fig.

Entomological Notes, Captures, &c.

Collecting in the Lake District.—I spent nearly the whole of the last week of June in Wastdale, and made the ascent to the Sty-Head tarn daily; but although the season had been very dry it had been cold, and I never saw Cassiope. Wastdale itself was singularly bare of Lepidoptera. The only insect at all common was Pamphilus, which flew in swarms about one-third of the distance up the Sty-Head Pass. After having given the Sty-Head up as a failure I went through Keswick to Wythburn, at the foot of Helvellyn, and made the ascent of that mountain twice. The vegetation is exactly like that at Sty Head, and Cassiope will be sure to turn up there some day. At the foot, and for a short distance up, flew Pamphilus; and when about half-way to the top I noticed a small insect flying, of which I took two or three. This has been identified, by my friend Mr. Birchall, as undoubtedly Sericoris irriguana. This, I believe, is the first time it has been found in England, the other specimens being Scotch. After leaving the long grass, and when I had reached the weather-worn, scanty turf which covers the highest parts of Helvellyn, I began to take Crambus furcatellus, of which I managed to secure perhaps twenty. On the very brink of the precipice, which is on the Patterdale side of Helvellyn, Salicata was flying in some numbers, but as it flew principally over the abyss it was not to be had in any quantity. I took one on the very top, close to the cairn that marks the highest point. It was strange that ten yards from the edge not one was to be seen, while when on the edge and looking down, about two or three were to be seen at a time flying about the face of the precipice. I was much disappointed with the result of my trip, for the store-box I had brought home from Rannoch last year nearly full was ludicrously empty. Let us hope this year's trip will prove more productive.—*J. C. Wassermann; Beverley Terrace, Cullercoats, Dec.* 9, 1874.

Captures of Lepidoptera in 1874.—The following are amongst my best captures during the past season:—L. Sinapis, A. Paphia, Aglaia and Adippe; New Forest. I also took a fritillary, which appears to be quite distinct from either of the latter. L. Sibylla; New Forest. A. Galathea; very common; Barnwell Wold. T. Quercus; New and

Sherwood Forests. T. Pruni; common; Barnwell Wold. These hairstreaks seemed very fond of the bramble and privet blooms, and we found that the best way to take them was to stand near a good batch of bloom, and wait. L. Asellus; one, by beating sallow; New Forest. Z. Meliloti; not uncommon in one particular ride in Stubby Copse; New Forest. C. miniata; Barnwell Wold and New Forest. L. mesomella; New Forest. E. dolobraria; Sherwood Forest. N. zonaria; Wallasey. P. Cytisaria and M. Euphorbiata; New Forest. C. Populata; common; Huddersfield. E. lineolata; Wallasey. A. Aceris; Southampton. X. Hepatica and M. anceps; Barnwell. L. Cespitis; Sherwood Forest. X. Polyodon; one or two, very dark; Muker, North Yorkshire. A. caliginosa; New Forest. N. glareosa; in profusion; Sherwood Forest. T. opima; Wallasey. E. Fulvago, E. nigra, and M. Oxyacanthæ (dark *var.*); Sherwood Forest. H. Atriplicis and C. Scrophulariæ; Whittlesea. I also saw one specimen of C. promissa at the New Forest, but unfortunately missed it.—*S. L. Mosley; Edwinstowe, November* 16, 1874.

Vanessa Urticæ in 1874.—It would be interesting to have some account of what was observed by entomologists last year in the matter of the appearances of this insect. In the vicinity of Gravesend there were certainly a few stragglers about on the wing during April and May, but, though I examined nettles in many spots, I saw no broods of larvæ in the early summer, at the time they are usually noticeable, and from these fresh specimens ought to appear some time in June. I do not know how it may have been elsewhere, but I strongly suspect that about this part of Kent there was only one brood of V. Urticæ, the larvæ of which I saw in July: this would be consequent upon the cold and dry weather of the spring months retarding oviposition, or killing, possibly, some individuals before that could take place.—*J. R. S. Clifford.*

Scarcity of Pyrarga Egeria (Entom. vii. 129).—I much incline to your correspondent's opinion that P. Egeria has been written about in books as being much commoner in Britain than is actually the case, though in some localities it may be abundant. Of course it is possible that the species may have been more generally abundant before so wholesale a demolition of wood and forest was carried out, as has been seen during the last seventy or eighty years. And yet I scarcely know why it should be, as the larva does not feed on plants in woods; but the imago is certainly more partial to such places than others of the satyrs, excepting S. Hyperanthus. Wherever I have seen and taken P. Egeria in Middlesex, Kent, and Hertfordshire, in point of plentifulness it would be put far below such a species as A. Euphrosyne, for instance. It is a butterfly that I have very rarely seen in the act of settling on any flower.—*J. R. S. Clifford.*

Leucophasia Sinapis.—In taking L. Sinapis at the New Forest, during the fore part of July, I took one without the black tips. Is this the female, as stated in Newman's 'Butterflies;' or is it a variety, as stated by other entomologists?—*S. L. Mosley.*

[Of course the duty of replying must devolve on others. Will Mr. Doubleday, Mr. Birchall, or Mr. Weir, kindly reply? I retain the opinion I have already expressed; but am by no means confident.—*Edward Newman.*]

Note on Zygæna Filipendulæ.—I wish to bring under your notice a curious fact in relation to the time of appearance of Z. Filipendulæ. This year, in a field sheltered by woods, and in a low situation, about four miles from Winchester, I took, on June 9th, two specimens of Z. Filipendulæ in good condition, and apparently but lately emerged, in company with Z. Trifolii, which was in very bad condition. At this time Z. Filipendulæ (which is common on many of the downs in the neighbourhood of Winchester) had not there, in those higher and more exposed situations, even assumed the pupa state, nor did it begin to do so for some time after this date. The first imago I saw was on July 10th, just a month after the appearance in June. Should you think that the difference of the times of appearance was simply owing to the difference of situation; or is there any other explanation of it? I do not suppose there can be any mistake as to the identity of the earlier moth, as the two are exactly similar, as far as I can see. The yellow variety appeared again, though sparingly, on the downs, with the later insects in July; but I have not heard of its having been taken in June with the moths that appear at that time.—*Nelson M. Richardson; 4, Upper Queen's Terrace, Southampton, September* 29, 1874.

[I can offer no explanation of the discrepancy in time of appearance.—*Edward Newman.*]

Larvæ of Bombyx Pernyi.—These larvæ manifest some disposition to attack each other when in confinement,—a circumstance rather unfavourable to attempts to breed the species on a large scale, with a view to an economic use of the cocoons. The time of inactivity during the ecdyses is remarkable, in the case of some individuals, extending occasionally to seven days. It is compensated for by brisk jaw-work afterwards; for, through the latter part of their life, these larvæ seem to eat both by day and night. On the day before the cocoon is commenced they discharge from the mouth a good quantity of fluid, which is not, however, of an acrid character, but rather glutinous. It is sometimes emitted in less quantity, at an earlier period, if a larva is irritated. —*J. R. S. Clifford.*

[Notwithstanding my earnest desire to promote the science (if I may so call it) of Economic Entomology, I would venture to caution entomologists against attempting to rear the various Asiatic silkworms, which have verticillate larvæ and pyriform cocoons, on too extensive a scale: it is well to be certain that you are able to walk safely before you attempt to run. I have become cognizant of such repeated failures in the attempts to rear these silkworms that it seems needful to offer this caution. No sufficient cause for the mortality among these magnificent larvæ has yet been discovered. Such cause must not only be discovered, but removed, before extensive operations can be successful.—*Edward Newman.*]

Fidonia atomaria.—On Sunday, October the 11th, while walking through Sherwood Forest, an insect flew across the path, which I took to be Cheimatobia brumata; but as I had not taken that species here I netted it to make certain, when it proved to be a male specimen of Fidonia atomaria. Is not that unusually late for this species to be on the wing?—*S. L. Mosley; Edwinstowe, October* 20, 1874.

Eupithecia Knautiata of Gregson.—Seeing Mr. Gregson's description in the 'Entomologist' (Entom. vii. 255) of a pug new to science (E. Knautiata), it may not be out of place to remark that I have known the locality where it is taken ever since I was a schoolboy, and remember, when birds-nesting on Bullshill, that heath grew there in abundance; and at a later period when, as an angler, frequenting the Bolton and Bury canal, heath grew on the off-side of the canal, above Holker's Bank, the other locality where this pug larva is taken. At the present time, what with coal mines, chemical works, &c., the heath appears to be entirely destroyed. Is it not just possible that Minutata, finding its natural food-plant diminishing, has taken to Knautia arvensis, and, by so doing, has produced itself in a more enlarged form? It would be worth the trial to feed the heath Minutata from the egg on K. arvensis, and note the result. In referring to my diary I find, on October 2nd, 1870, when on a visit to Bolton, my friend Mr. Porter told me of this larva, and we went and found it in abundance. I have taken it since; but not this season.—*Wm. Johnson; 66, Upper Warwick Street, Park Road, Liverpool, November* 29, 1874.

[I greatly desire the addition of a new British species to the interesting genus Eupithecia; but I cannot think that Mr. Gregson has published any characters in the 'Entomologist' which will induce his readers to admit E. Knautiata as being so. If Mr. Gregson will kindly send me for publication a specific description, and append a memorandum contrasting the species, or, as I should say, differentiating it from the most nearly-allied species, he will be doing a real service to Entomology. I have received Mr. Gregson's second letter on the subject, but this does not seem to meet the case. I am unable to find *any* distinctive character in what he has hitherto written; but I confess this may be owing to my imperfect knowledge of the genus.—*Edward Newman.*]

Unusual appearance of Cidaria Silaceata.—On the 10th of December (weather being frosty) I was surprised to see a fine female specimen of this moth in my breeding-cage, reared from a larva obtained in the autumn. The cage stood in a natural temperature; and having expected Pœcilocampa Populi to make its appearance I had been looking in the cage daily, so that there can be no mistake about the time of appearance of C. Silaceata.—*F. O. Standish; 402, High Street, Cheltenham, December*, 1874.

Economy of Anarta Myrtilli (Entom. vii. 178).—On Shirley Heath, where, in former years, I have spent three or four hours at a time in August and September hunting for the larvæ of this insect, it used to occur in the spring as well as in the autumn,—in larger proportion at the latter season. It is not easy to obtain, as it falls from the heath if alarmed, even perhaps by the sound of a footstep. The best way is to sweep the plants with a circular net; beating them into an umbrella is not so effective, as, from the mode in which the larvæ rest, they slip by the edge of the umbrella. Of the larvæ thus taken in autumn all will not feed-up the same season, even in confinement; but few survive until the spring. They appear to eat at intervals, which renders it more difficult to manage them. The insect occurs also on Wimbledon Common, on the side near the park.—*J. R. S. Clifford.*

South London Entomological Society.—The third annual exhibition of this Society was held on Wednesday evening, December 9th, in the Girl's School-room, St. Mary's, Newington, which had been kindly lent by the managers. There was that variety of objects which always gives its charm to meetings of this kind. All orders of insects, and those of all climes, were abundantly represented. One of the most interesting cases was exhibited by Mr. Weir, the Comptroller-General of H.M. Customs. It was labelled "Mimicry," and contained specimens of butterflies which possess the marvellous power of changing colour when pursued by a certain bird that has a peculiar liking for their flavour, and contemplates them with an ardent affection akin to that with which an alderman may be supposed to regard real turtle. No sooner, however, is the insect aware of its pursuer, than it transforms itself into the similitude of another butterfly, for which the bird has no taste at all, but rather holds in abhorrence. So the accomplished harlequin of the pantomime escapes, unscathed, to practice the same clever deception over and over again. Mr. Hoey exhibited a case of larvæ admirably preserved. Mr. Wellman (the President), Mr. Champion, Mr. Tugwell, Mr. Williams, Mr. Power, and many others, were also contributors; and I must not omit Mr. Barrett, the indefatigable Secretary, to whose courtesy, unwearying assiduity, and excellent arrangement, the exhibition was mainly indebted for its success.—*Edward Newman.*

EXCHANGE.

Duplicates.—A. Urticæ. *Desiderata.*—P. Populi and T. Cratægi.—*William Machin; 22, Argyle Road, Carlton Square, N.E.*

Duplicates.—Tipuliformis, Senex, Irrorella, Sambucata, Vespertaria, Advenaria, Illunaria, Tiliaria, Prodromaria, Viretata, Blomeraria, Rubricata, Imitaria, Strigillaria, Subfulvata, Isogrammata, Pimpinellata, Unidentaria, Signata, Vitalbata, Dubitata, Vetulata, Plumigera, Orion, Comma, Xerampelina, &c.—*Wm. Simmons; Blossom Street, York.*

Duplicates.—Pruni, Comma, Helveola, Salicis, Castrensis, Typhæ, Nictitans, Micacea, Suffusa, Dentina, Pisi, Niveus.—*A. Hodgson; 57, Brook Green, Hammersmith, London, W.*

Duplicates.—Templi, &c.; also a few live females. *Desiderata* (in addition to most of last month's).—Fluviata, Sagittata, Reticulata, Dotata, Dictæoides, Fluctuosa, Abjecta, Alsines, Blanda, Fennica, Obelisca, Subsequa, Flammatra, Subtusa, Irregularis, Conspersa. —*J. Harrison; 7, Victoria Bridge, Barnsley.*

Duplicates.—Cecropia, Cynthia; and numerous British. *Desiderata.*—Atropos, Bombyliformis, Myopæformis, Sphegiformis, Apiformis, Globulariæ, Cristulalis, Strigula, Senex, Pygmæola, Caniola, Molybdeola, Quadra, A. Urticæ, Cœnosa, Quercifolia, Versicolor, &c.—*S. L. Mosley; Almondbury Bank, Huddersfield.*

Duplicates.—Cardamines, Dominula, Humuli, Badiata, Cervinaria, Fulvata, Cæruleocephala, Vinula, Salicis, N. Rubi, Plecta. *Desiderata.*—Larvæ, only, of Sesidæ and Æsculi; and many Noctuæ larvæ for figuring, in their various stages, for publication.—*Owen Wilson; Cwmffrwd, Carmarthen.*

Duplicates.—Imagos of Cinxia, Puta, Pistacina, &c. *Desiderata.*—Numerous imagos; eggs of Dispar, &c.—*W. Tunley; 111, High Street, Ryde, Isle of Wight.*

Duplicates.—Rhamni, Cardamines, Io, Sylvanus, Populi, Ligustri, Salicis, Auriflua, Lubricipeda, Psi, Megacephala, Pinastri, Nupta, Cratægata, Punctaria, Atomaria, Grossulariata, Bilineata, Plumbaria. *Desiderata.*—Edusa, Cratægi, Sinapis, Egeria, Hyperanthus, Blandina, Cassiope, Sibylla, Iris.—*F. G. Whittle; 20, Cambridge Terrace, Lupus Street, S.W.*

Duplicates.—Pupæ of Miniosa, Opima, Polycommata, and Prodromaria.—*T. W. Salvage; 38, Southampton Street, Brighton.*

Duplicates.—Templi (also a few live females for breeding), Angularia, Davus, Selene, Crepuscularia, Glareosa, Nebulosa, Velleda, Oleagina, Ægon, Cerago, Mi, Diluta, Chi, Argiolus, L. Comma, Alsus, Typica, Blomeri, Ocellata, Iota, Immanata, Lithargyria, Plecta, Augur, Rubricollis, Lunaria, Adustata, &c.—*Joseph Jackson; 4, Kendray Yard, Barnsley.*

Duplicates.—Adonis, Alsus, Athalia, Semele, Galathea, Polychloros, Trifolii, Filipendulæ, Irrorella, Plantaginis, Advenaria, Illunaria, Pilosaria, Hispidaria, Repandata, Consonaria, Ornata, Temerata, Pictaria, Dealbata, Strigillaria, Leucophearia, Cæsiata, Affinitata, Juniperata, Hastata, &c.—*T. P. Lucas; 8, Mount Terrace, Hercules Buildings, Lambeth, London.*

Duplicates.—A few pupæ of Sagittata. *Desiderata.*—Atropos, Bombyliformis, Chrysidiformis, Ichneumoniformis, Sphegiformis, Arundinis, Dolabraria, Viduaria, Glabraria, Abietaria, Orbicularia, Degeneraria, Alternata, Pulveraria, Conspicuata, Tæniata, Ruficinctata, Arceuthata, Irriguata, Campanulata, Togata, &c.—*W. Prest; 13, Holgate Road, York.*

Changes of Address.—W. Tunley, *from* Guernsey, *to* 111, High Street, Ryde, I. W. Edward F. Bisshopp, *from* Gloucester Road, Regent's Park, N.W., *to* Ipswich.

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CONTENTS.

Descriptions of Oak-galls (with illustrations); translated by *Mrs. Hubert Herkomer* née *Weise*, 121. Life-histories of Sawflies; translated from the Dutch by *J. W. May*, 123. Notes on Ephyra punctaria and E. pendularia, *B. G. Cole*, 125. Some Remarks on Collecting and Collectors, *W. A. Lewis, F.L.S.*, 127. Notes on Oviposition, *Rev. P. H. Jennings*, 130.

Entomological Notes, Captures, &c.—Vanessa Atalanta, *W. A. Luff*, 131. Lycæna Alsus, *W. Thomas*, 132. Eupithecia consignata at Cambridge, *Gilbert Raynor*, 132. Eupithecia extensaria, *James Sawyer*, 132; *N. F. Dobrée*, 133. Eupithecia Knautiata, *J. Cosmo Melvill*, 133. Leucania extranea or unipuncta; The Season at Lyndhurst, *H. Ramsay Cox*, 134. Variety of Clostera curtula, *H. Wittich*, 134. Xylomiges conspicillaris at Dartford, *A. B. Farn*, 135. Agrotis Helvetina, *Henry Doubleday*, 135. Larvæ of Cirrhœdia xerampelina, *A. Thurnall*, 135. Beetle Destructive to Mangold Wurzel, *E. Newman*, 135. Sugaring: Toads at Sugar, 137; Localities and Collectors, 139, *G. B. Corbin*.

Answers to Correspondents.—P. 141. Death of Mr. Davis, *E. Newman*, 144.

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MR. W. H. HARWOOD wishes to state that he will be unable to attend to Entomological Correspondence during the present month. After July 1st his Address will be 8, West Stockwell Street, Colchester.

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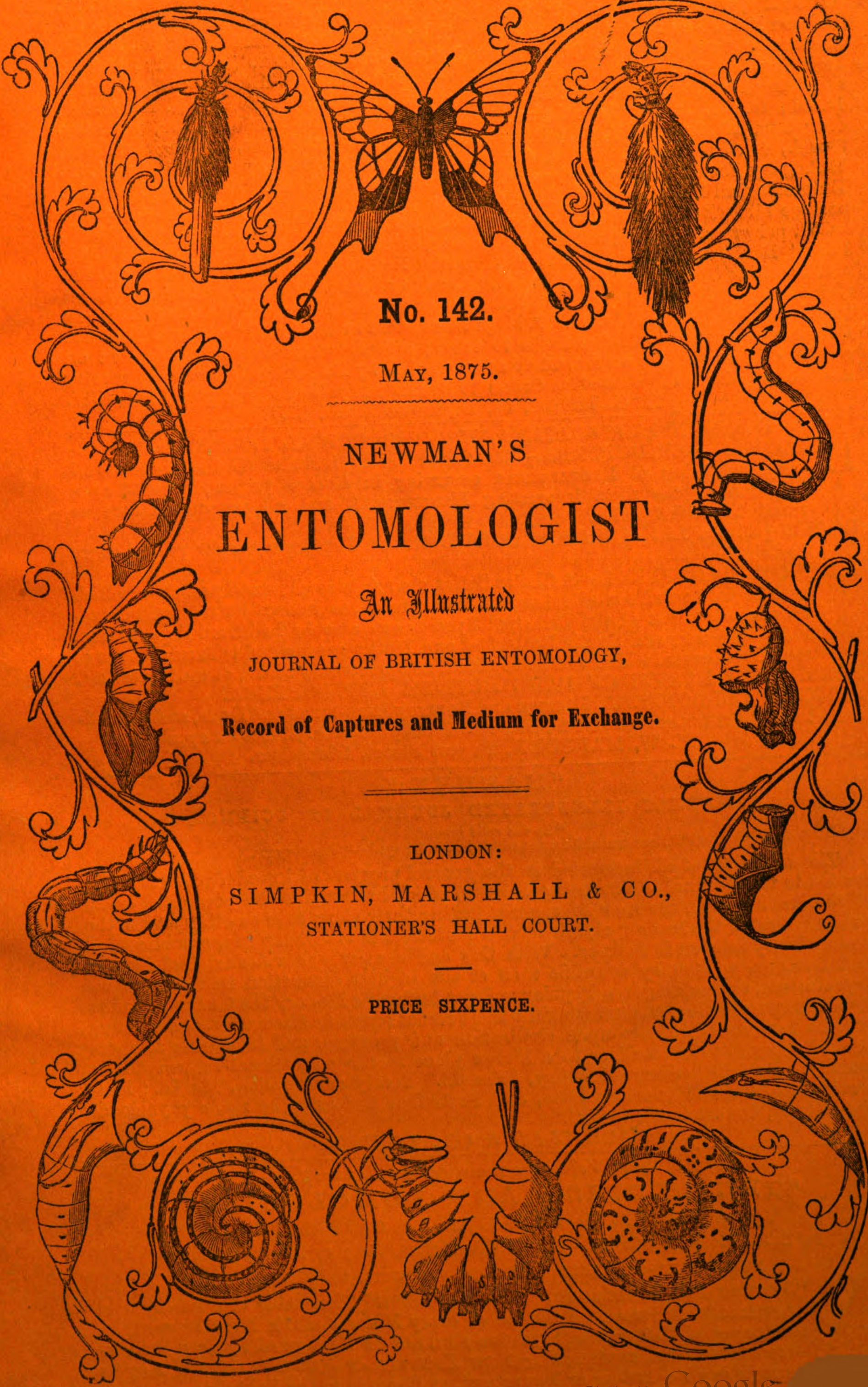

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Trap-door Spiders in the Bark of Trees. By E. Newman.

"It is now one hundred and sixteen years since Patrick Browne gave an illustration, in his 'Civil and Natural History of Jamaica,' p. 420, tab. 44, fig. 3, of the nest of a trap-door spider, the first record of the kind with which I am acquainted [published in London in 1756]. Seven years later the careful observations of the Abbé Sauvages appeared [in the 'Histoire de l'Acad. Royales des Sciences,' pp. 26—30, published in Paris, 1763], in which he gave a very good description of the nests of the 'Araignée maçonne' (Nemesia cæmentaria), which he discovered near Montpellier, likening them to little rabbit-burrows lined with silk, and closed by a tightly-fitting, movable door. Rossi [in an article intituled, "Observatione Insettologische," published in the 'Memorie di Matematica et Fisica della Società Italiana,' vol. iv. 1778; and 'Fauna Etrusca,' vol. ii. 1794] published an interesting account of the nest and habits of a trap-door spider, which he had observed in Corsica, and near Pisa; and from that time up to the present day the curious dwellings of these creatures, many of which have been discovered in warm climates, have continued to attract the attention of naturalists."

The foregoing extract is from a work intituled, 'Harvesting Ants and Trap-door Spiders,' by J. Traherne Moggeridge, part ii. p. 73. The mode in which these *residences* are constructed is admirably explained by Mr. Gosse, at page 115 of his 'Naturalist's Sojourn in Jamaica.' Both these authors—Mr. Moggeridge, alas! is no more—are inimitable in their graphic descriptions of the habits and manners of the living; a science totally apart from the anatomical details of the dead, with which the attention of naturalists has been too exclusively occupied. Mr. Gosse writes as follows:—

"In digging their mountain-gardens the negroes often expose the curious subterranean nests of the trap-door spider (Cteniza nidulans), many of which are brought to me. This spider makes its tubular dwelling in soft earth, frequently choosing cultivated ground, on account doubtless of this quality. Each nest is cylindrical, or nearly so, from four to ten inches deep, and about one inch in diameter; the bottom is rounded; and the top, which is at the surface of the soil, is closed very accurately with a circular lid. They are not all equally finished, some being much more compact, and having the lid more closely fitted than others. Some have irregular bulgings and ragged laminated off-sets on the outer surface; but all are smooth and silky on the inside. This smoothness, however, does not preclude any little irregularities or unevenness of surface; nor is it glossy: its appearance rather resembles that of paper, which has been wetted and dried again; it is always of a reddish buff hue, but the outside is stained of the colour of the surrounding earth. The mouth of the tube and the parts near it are very strong; the walls here often having a thickness of from an eighth to a quarter of an inch, but the lower parts are much thinner. The lid is continuous with the tube for about a third of its circumference, and this part may be called the hinge, though it presents no structure peculiar to itself; it is simply bent at a right angle, as is manifest if a nest be cut longitudinally through with scissors, the incision passing through the midst of the lid.

"The mode of construction I judge, from examination of many nests, to be this. The spider digs a cylindrical hole in the moist earth with her jointed fangs or mandibles, carrying out the fragments as they are dislodged. When the excavation has proceeded a little way she begins to spin the lining, which forms the dwelling. I conclude thus because nests are occasionally found a few inches in length with the lid and upper part perfect, but without any bottom, these being evidently in course of formation. I suppose that she weaves her silk at first in unconnected patches against the earthy sides, perhaps where the mould is likely to fall in; and thus I account for the loose, rough laminæ of silk that are always found projecting from the outer surface. These are overlaid with other patches more and more extensive, until the whole interior walls are covered; after which the silk is spun evenly and continuously all round the interior, in successive layers of very dense texture, though thin. Under the microscope, with a power of 220 diameters, these layers are resolved into threads laid across each other, and intertwined in a very irregular manner; some are simple, varying from a seven-thousandth to a two-thousandth of an inch in diameter, and others are compound, several threads in one part separate, being united into one of greater thickness, which cannot then be resolved. No pellets of earth are ever interwoven with the silk to form the outer layers of the walls, though the adhesive nature of the silk when freshly spun causes fragments of earth to remain attached to the surface. The mouth of the tube is commonly dilated a little, so as to form a slightly recurved brim or lip; and the lid is sometimes a little convex internally, so as to fall more accurately into the mouth and close it. The thickening of the hinge by additional layers is, I think, accidental only, as out of the many specimens I have examined only one or two had such a structure. In the neatest examples the lid is of equal thickness throughout its extent, agreeing also with the walls for the first few inches of their depth.

"One of peculiar compactness, now before me, I have slit open longitudinally with a pair of scissors in the manner spoken of above: the thickness of the substance is in no place greater than one-sixteenth of an inch, which is very regularly maintained throughout the lid and upper parts. The appearance at the cut edge closely resembles mill-board so divided; the layers of which it is composed being very numerous and compact, especially towards the interior side, where they can scarcely be distinguished even with a lens. In this specimen there is what I cannot find in any of the others I have examined. A row of minute holes, such as might be made by a very fine needle, are pierced around the free edge of the lid, and a double row of similar holes just within the margin of the tube. There are about fifteen or sixteen punctures in each series, and they penetrate through the whole substance, the light being clearly seen through each hole. Now what is the object of these orifices? I do not think, as I have somewhere seen suggested, that they are intended to afford a hold for the spider's claws when she would keep her door shut against the efforts of an enemy; for what would have been the use of having them in the tube, *close to the lid*, so that not the eighth of an inch intervenes between the series of the lid and that of the tube, when the former is tightly closed. I would suggest whether they may not be air-holes, for so tight is the fitting of the lid, and so compact the texture of the material, that I should suppose the interior would be impermeable to air but for this contrivance; and as those in the horizontal lid might possibly be closed by minute particles of earth rolling on it, the second row around the edge of the perpendicular tube, just at the surface of the ground, would still be available in such a contingency. They may admit also an appreciable amount of light."

I am not disposed to pursue the subject of these minute holes further than to say that these holes suggest to my mind the idea of a needle and thread having been passed through and through, and the needle and thread subsequently withdrawn. But I will here mention the occurrence in Britain of a spider closely allied to the trap-door makers, the particulars respecting which were communicated to the Linnean Society by myself in February, 1856, and were subsequently published in the 'Zoölogist' for that year (Zool. 5021). This spider is Atypus Sulzeri of Latreille, the Oletera atypa of Walckener; and a full account of its doings is given from the observations of Mr. Joshua Brown, of Cirencester, who suggests that it was feeding on an earth-worm at the time of capture. A female only was obtained, the males eluding the most diligent search; and Mr. Brown expresses his wonder where they could possibly secrete themselves. There is no trap-door to the domicile of this spider, which consists simply of a single tube constructed in the earth. Walckener, in the first volume of 'Histoire Naturelle des Insectes Aptères,' thus records its economy at page 244:—

"The female constructs, in rather moist places, a subterranean gallery, first in a horizonal direction, and then turning downwards. In the interior of this gallery she constructs a very close, white, silken tube, which she strengthens with bits of grass and moss; and at the bottom of this she deposits her eggs in an oval mass, enveloped in a web of white silk, and fixed by threads at each end. She leaves part of the tube hanging out of the hole to protect the entrance: this external part is two or three inches long, and half an inch in diameter. The tissue of the tube is very close, fine and white, and resembles the cocoon in which some lepidopterous pupæ are enclosed. It is of uniform diameter, and terminates below in a slightly pointed extremity, which is attached to a bundle of silky hairs interlaced with fibres of plants. Thus the bottom of the tube is protected from the humidity of the earth."

I will now continue the quotation from the 'Zoologist,' in Mr. Brown's own words:—

"When on a visit to Hastings during the past autumn, having to pass through a lane with a high and steep sand-bank on each side partially covered with grass and bushes, I noticed on one of the banks, which had a south aspect, something hanging down, which looked like the cocoon of some moth; but found, on compressing it slightly, that it was quite empty. It then occurred to me that it might be the nest of a spider; and on examining more closely I found, to my surprise, that it descended into the bank, and appeared firmly attached at the distal extremity; so firmly, indeed, that I could not extract the first I found without breaking it. My curiosity, however, was now thoroughly awakened; and, on finding a second example, I went more cautiously to work, removed the sand carefully with a long knife, and at a depth of nine inches I found the extremity of the structure, and drew it out quite perfect. It was a long silken sack, and at the bottom was a hardish lump, which proved to be a spider. The next I tried went very much deeper; indeed so deep that I failed, after much trouble, in getting it out at all. I tried many others, sometimes succeeding and sometimes failing in my attempts to get them out entire. I found them vary greatly in length, and think they may be lengthened at various periods of the spider's growth. In some of the nests there seemed very obvious indications of this lengthening. The usual length was about nine inches, but some were very much longer. Their form is tubular, commonly of an uniform diameter of three-quarters of an inch, and rounded at one end in the form of a purse. They are composed of very fine silk, closely woven throughout; white or whitish within, and covered exteriorly with yellowish or brownish particles of sand, which give the tube a dirty appearance exteriorly; but inside they are always neat and clean. The exterior portion of this tube visible on the bank is about two inches in length, pendant, and always inflated; it is of a darker colour than the subterranean portion of the tube, and agrees in this respect with the general surface of the bank. I took home one of these tubes in a collapsed state, or with the sides pressed together, and having the spider at the extremity. On opening the box I perceived a movement throughout the tube, as if it were undergoing the process of inflation; this soon subsided. The next morning, however, I was surprised to see the tube inflated throughout its entire length, more especially at that end which had been exposed on the bank. How can the spider effect this? In some of the tubes it is very difficult to discover any external aperture; but, in that portion which is exposed and is distended more than the rest, I sometimes discovered one or more minute openings, protected or covered by a little valve or door. In some nests these openings are not to be detected; when present they open towards the bank. Although very loosely constructed at the lower extremity, I do not think there is an opening there, except when the spider is deepening her burrow; or, I think, in some instances, the spiders would have escaped through it when I extracted the sack. This was never the case."

This process of inflation is one of the greatest possible interest. Although, through the courtesy and kindness of Mr. Brown, I am possessed of ample materials for doing so, I never could discover the mode of inflation. The object was more easy to account for, since the adhesive nature of the silken lining of the sack rendered the walls very liable to cohere, and thus the tubular character of the structure would be destroyed.

Mr. Brown most kindly sent me living specimens, in order that I might examine them for myself; which I did with great deliberation and care, but without obtaining any further information. I particularly directed my attention to the subject of food, Mr. Brown having conceived the idea that the spider fed on earth-worms. This idea seems to arise from his having found a mangled earth-worm, in connection with the tube, during the course of his diggings and investigations; and more especially from his having been unable to find the wings, legs, or other parts of insects, attached to the silky tube; which one would have reasonably expected, had the spider subsisted on an insect-diet. The most rigid search revealed nothing of the kind. Still I am reluctant to believe in the vermivorous appetite of the spider, without more conclusive evidence than we at present possess.

A male Atypus Sulzeri was taken from a rabbit-earth while ferretting in the neighbourhood of Bloxworth, in January, 1857, and was transmitted by the Rev. O. Pickard-Cambridge to Mr. Mead, of Bradford, and recorded in the 'Zoologist' for that year (Zool. 5624).

The late Mr. Sells, in the Transactions of the Entomological Society of London has, in a paper intituled, "Notes respecting the Nest of Cteniza nidulans," entered into many details concerning these interesting spiders; and Sir Sidney Smith Saunders, the present President of the Entomological Society, has given, in the Transactions of that Society, admirable figures and descriptions of a trap-door spider inhabiting the Ionian Islands, which he has called Cteniza Ionica. (See vol. iii. p. 160, pl. ix.) Sir Sidney Saunders has also greatly distinguished himself as a most painstaking observer, by his researches into the economy of those minute parasitic Coleoptera which prey on bees.

Mr. Moggeridge's admirable work, intituled, 'Harvesting Ants and Trap-door Spiders,' published in 1873, throws considerable light on these interesting spiders. I must content myself with two short quotations:—

"The nests are exceedingly difficult to find, and in some cases it is only by chance that I have been able to light on them. All these trap-door spiders seem usually to prefer rather moist and shady places and sloping banks, or loose terrace-walls, where the interstices between the stones are filled up with earth, and concealment is afforded by the creeping Lycopodium (Selaginella denticulata), Ceterach spleen-wort, or maidenhair ferns, with short moss and splashes of white lichen to distract the eye." (*Moggeridge*, p. 91.)

Mr. Moggeridge goes on to describe different forms of nest; and afterwards refers to the well-known habit of the trap-door spider of keeping the door closed by holding on from within. He relates his own experience in these words:—

"I will now relate what I saw on one of these occasions, for there has been much speculation as to the manner in which the spider clings to the door, and offers the determined resistance which is experienced. No sooner had I gently touched the door with the point of a penknife than it was drawn slowly, with a movement which reminded me of the tightening of a limpet on a sea-rock, so that the crown, which at first projected a little way above, finally lay a little below the surface of the soil. I then contrived to raise the door very gradually, despite the strenuous efforts of the occupant, till at length I was just able to see into the nest, and to distinguish the spider holding on to the door with all her might, with her fangs and all her claws driven into the silk-lining of the under surface of the door. The body of the spider was placed across and filled up the tube, the head being away from the hinge; and she obtained an additional purchase in this way by blocking up the entrance."

Mr. Moggeridge believes that whenever a spider resists in this way she makes the needle-holes, to which former allusion has been made; but, without wishing to controvert the opinion of so excellent an observer, I may perhaps be excused for remarking that the regularity of these minute holes rather militates against the supposition that they are caused by this process of holding on with fangs and claws to prevent the lid being opened by an enemy.

I have here to mention a fact and a surmise in connection with these trap-doors that seems to partake rather of the character of romance than of sober reality. The door is covered with Lycopodium and moss, presenting exactly the same appearance as the surrounding surface. Mr. Moggeridge thus describes one particular instance:—

"The moss on the door grew as vigorously, and had in every way the same appearance, as that which was rooted in the surrounding earth; and so perfect was the deception that I found it impossible to detect the position of the closed trap-door, even when holding it in my hand. There can be no doubt that many nests escape observation in this way; and the artifice is the more surprising because there is strong reason to believe that this beautiful door-garden is deliberately planted with moss by the spider, and not the effect of mere chance growth." (P. 97.)

Up to this date all recorded observations—including those of Mr. Moggeridge, the last and most complete—point to spiders burrowing and constructing habitations *in the earth.* On the 7th of October last (1874) a communication was received by the Editor of the 'Field' from Mr. Bain, of 71, Cornhill, containing a cutting from the 'Uitenhage Times,' a South African newspaper, of which the following copy appeared in the 'Field' of October 10th:—

"*Remarkable Spider.*—Unless we are mistaken, there is a species of this insect in Uitenhage which is at present unknown to entomologists beyond. It was discovered a few years ago by Dr. Dyer in the bark of his oak trees. On very close examination of the bark a beautifully-formed oval lid may be discovered, of about a third of an inch longer diameter. On raising this lid with the point of a penknife it will be found to open into a conical cavity, which is occupied by a small jet-black spider. The insect resists the raising of the lid with the tenacity of an oyster refusing to be opened, and holds on with all its might by two feet. As soon as the penknife is withdrawn, the door is closed with a sudden snap. We have consulted naturalists and books, but have not succeeded in gaining any description that answers to this insect. Should this paragraph meet the eye of anyone possessing information on the subject we should be thankful."

This did meet the eye of one possessed of some information on trap-door spiders, he having read Mr. Moggeridge's work on the subject. I therefore wrote the following note, which appeared as an Editorial comment on the extract:—

"This is one of the great family of trap-door spiders, which have attracted the admiring notice of all naturalists. Of these, the species known as Cteniza nidulans is perhaps the most familiar. It is a native of the West Indies, and constructs in the earth a tube, which it lines with silk. The lid so exactly resembles the surrounding earth, that it is impossible to detect it when closed by the spider from within. Another very interesting species inhabits the Ionian Islands, and forms its tube among the roots of trees; and others inhabiting the south of Europe, more particularly Mentone, have been observed and described by Mr. Moggeridge, in a work of surpassing interest. It is difficult to say when the very earliest account of these wonderful creatures was published; but those cited by Mr. Moggeridge are among the earliest and best. The most complete and elaborate are by Patrick Browne, in 1756; by the Abbé Sauvages, 1763; by Rossi, in 1778 and 1794; by Mr. Gosse, 1847; and finally by Mr. Moggeridge, in 1873. The description quoted by our correspondent is very exact: but these spiders generally construct their habitations in the earth, and not in the bark of trees. This may, therefore, prove a species of trap-door spider new to science."—*Edward Newman.*

It appears that it attracted the attention also of another reader, who designates himself "Anglo-African," who wrote the following paragraph, which appeared in the 'Field' of October 17th:—

"It may interest your readers to learn that the trap-door spider, described in the 'Field' of October 10th, is also found in the neighbourhood of the Vaal River, South Africa, in the regions of the Diamond Fields. I have myself discovered two trap-doors. The first time, when lying in my tent one hot Sunday afternoon, with the curtains of the tent up, I observed the trap open just outside the tent, and the spider come out, leaving the trap open. On being slightly alarmed, by pushing a stick in his direction, he retired at once, and closed the trap. So very like the surface was this, that, looking away to call a 'chum' to watch him, I could not again see the place. However, our attention was rewarded in a short time by the spider again appearing,—I suppose on a foraging expedition. It was suggested to try if he was afraid of rain, and, on sprinkling the ground on which he had taken his afternoon's walk, he beat a retreat again. This was repeated several times on his finding nothing was the matter. The door, or trap, was of an oval form, about three-quarters of an inch by half an inch in size, and appeared to have a capital hinge, and was countersunk, so as to be level with the ground, and fitted in a marvellous way. We took bearings of the spot, and intended to have another interview with our little friend; but a 'new rush' set in, and he was completely forgotten. I should mention that this was in gravelly soil. On the other occasion I and my chum were 'prospecting,' but not for trap-door spiders. However, we came on the tube of one in digging away the surface sand, and, carefully working round it, got it out intact. It was quite two feet six inches in depth, and at the bottom was three times the size of the tube: this large part was, I presume, the sleeping apartment, as it is evident he must have 'dined out.' The tube was straight as possible, and strengthened at intervals of about an inch by extra rings, something like a Malacca cane. The interior, as far as we could see down it, was perfectly smooth, and about the size of the one described above. The trap-door was most cleverly fitted, and, as in the other case, corresponded exactly with the surface soil. The tube was quite strong, and bore its own weight easily. Whether or no its maker was inside or not I cannot say, as having, unfortunately, given it to one of our Zulu servants to carry to camp, whilst we proceeded with our work, I never saw it again; and the 'boy's' reason for not bringing it was that, being asked to take a 'soupjie' at the canteen, he put it down outside to be safe, and could not find it again. This specimen was found opposite Jautzjie's Kraal, at Likatlong, and some mile and a half from the Vaal River.—*Anglo-African*."

It certainly does not appear to me that this spider is of the same species as that recorded on the 10th of October, no mention being made of the tree-trunk habitat. However, I have reprinted it with the view of making the subject as complete as possible.

On the 25th of May of the present year Mr. Kemsley, formerly editor of the 'Uitenhage Times,' brought over with him from South Africa some of the spiders alluded to in that paper. They were consigned to his care by his friend Mr. Bidwell, of the same paper, who requested to have them reported on. Having suggested, as previously quoted, that "they might be new to science," Mr. Bidwell wished it to be ascertained whether such was the case. The spiders arrived in good condition, each in little square pieces of oak-bark, or what was so called, containing the spider and its domicile. They had maintained a rigorous fast during their transit from South Africa to the Strand; in fact, Mr. Kemsley knew not whereon to feed them. However, this abstemiousness did not appear to have interfered with their welfare; and the subject was fully discussed at the meeting of the Entomological Club, held here on the 23rd of June; and those present seemed to agree with me that the facts were new to science.

I have distributed them among entomological friends, especially sending some to the Rev. O. Pickard-Cambridge, begging him to investigate the matter, and report to the 'Field' newspaper,—a journal which has distinguished itself for years by the amount and accuracy of the Natural History information it has circulated. Mr. Cambridge, with his usual courtesy and energy, at once entered on the task, and reported as follows:—

"*A New Genus and Species of Trap-door Spider from South Africa.*—An account (extracted from a South-African newspaper) of the discovery by Mr. Dyer of a trap-door spider, whose nest is made in the bark of trees, was published in the 'Field' of October 10th, 1874. Examples of the nest, with the portion of bark in which each is constructed, together with the spider inhabiting one of the nests, have lately been handed to me by the Editor, with a request that I would write a few words upon the subject. It will, therefore, I think, interest the correspondent who sent them to learn that the spider belongs, as it appears to me, to a genus not hitherto characterised; its nest also being of a different type from that of all other trap-door spiders with which I am acquainted. The genus, for which I propose the name Moggridgea (in memory of my kind friend, the late lamented student of trap-door spiders, Mr. J. T. Moggeridge), is allied to Nemesia, *Latr.*, but differs from it, among other characters, notably in the absence of the usual short, strong spines at the fore extremity on the upper side of the falces, as well as in the wide separation of the eyes of each of the two lateral pairs. The spider which accompanied one of the nests is an adult female, and measures five and a half lines in length. The cephalo-thorax and falces are of a deep shining black-brown colour; the legs, which are short and strong, are of a lighter brown, the metatarsi of those of the second pair being of a clear yellowish white; the abdomen is of a dark purplish brown; and the tibiæ, metatarsi, and tarsi of the first and second pairs are furnished underneath, on either side, with a row of strong spines. The nest consists of a silken tube, scarcely more than an inch in length, rugged on the outside in such parts as may be exposed, and formed in the folds and interstices of the rough bark. This tube is closed with a hinged lid of an oval or circular shape (according to the exigencies of the position), and the entrance appears to be always at the earthward end; *i.e.*, the tube seems always to run upwards. One of the tubes submitted to me was constructed in the channelled groove of a piece of wood which had apparently formed part of some building or other. The shortness of the tubes, compared with those made in the ground by some species of Nemesia and Cteniza, is remarkable, as is also the position in which they are found; the lid, too, differs from all yet known to me, in being a compound of the two great types into which Mr. Moggeridge has divided those already known,—the 'cork' and 'wafer' types. Lids of the former are of solid construction, and fit into the mouth of the tube like a short cork, without any projecting margin; those of the second (or wafer) type are flatter, of much slighter or thinner make, and simply shut down upon the mouth of the tube. That, however, of the nest under consideration is of the 'cork' type, with a projecting 'wafer' margin; the cork portion is less thick than that of the typical 'cork' lid, but distinctly thicker than the margin, and fits into the tube, while the margin covers its edges so closely and completely that the nest is entirely concealed,—the outer side of the lid, like that of the exposed parts of the tube, exactly resembling the surrounding surface of the bark. The use of the spines on the falces of Nemesia (and Cteniza) is to excavate the hole in which the tube is made; but, as the present spider forms its nest in channels already made, these spines would be useless, and hence their absence; or perhaps it would be truer to say that the spider, not being furnished with the necessary implements, but gifted with the trap-door nest-making instinct, has thus fixed upon a position in which excavation is needless. Further details of form, colour, and structure, would be probably out of place here; but I hope shortly to prepare a more minute scientific description, with drawings of the spider and its nest, for publication in the Proceedings of the Zoological Society. With regard to its specific name, I propose to call this very valuable and interesting addition to our trap-door spiders, Moggridgea Dyeri, after its discoverer, Dr. Dyer, of Uitenhage, South Africa; and I would ask that gentleman to use his evidently keen powers of observation for the discovery of the male sex, which would no doubt present far stronger and more important specific characters than the female. A subsequent correspondent, 'Anglo-African,' in the 'Field' of October 17th, 1874, speaks of this spider being also found in another locality; but his description of the nest, its great length,—two feet six inches,—and its situation, show that it belongs to a much larger spider, and one of quite a different genus, probably to an undescribed species of Nemesia or Cteniza.—*O. P. Cambridge; Bloxworth Rectory, August* 20, 1875."

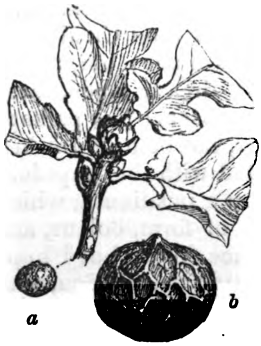
I trust that the interesting subject of trap-door spiders burrowing in the bark of trees, or at any rate utilizing the fissures of bark for the purpose of constructing their silken domiciles, will claim the attention of our correspondents in South Africa, and especially of the Messrs. Woodward, who have already done so much to illustrate the Natural History of these little-known regions.

EDWARD NEWMAN.

Descriptions of Oak-galls. Translated from Dr. G. L. MAYR's 'Die Mitteleuropäischen Eichengallen' by E. A. FITCH, Esq.

(Continued from p. 172.)

Fig. 30.

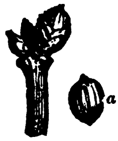


APHILOTHRIX GLOBULI.
In situ: *a*, detached; *b*, magnified.

30. *Aphilothrix globuli*, Hart.—This green spherical gall is found in the terminal or axillary buds of Quercus pubescens (and probably also of other oaks); one-half or more of the gall is covered with the bud-scales, and has a diameter from 3 to 4·3 millimetres. At the point opposite the base there is a wart (or a blunt cone) of a yellow or rusty red colour. The naked green surface of the gall is soft when fresh, and shows a sappy substratum, which, however, dries up in the autumn, and produces on the still green surface reticular plications or wrinkles. Inside the soft layer is the woody inner gall, which contains a larva-cell. The surface of this inner gall exhibits reticular rings. According to Hartig the fly emerges in the month of February.—*G. L. Mayr.*

In a subsequent note (second half, p. 68) Dr. Mayr says:—"The gall falls in October, while it is yet fresh and soft, and passes the winter on the ground." I have found the galls of this species in Essex (see Entom. vii. 24, and Ent. Mo. Mag. xi. 110) in the autumn, and even as late as the middle of December, still in the bud, where it is easily seen on account of its green colour. I, however, failed to breed any of their inmates, probably from the inner galls withering, as no doubt this species, like the Neuroteri (leaf-spangles), requires to be collected from the ground in the spring to be successful. Dr. Mayr gives Synergus ruficornis, S. vulgaris, and Callimome regius, *Nees*, as inhabiting its galls; Prof. Kaltenbach gives Siphonura chalybea, *Rtzb.;* Ratzeburg himself gives Eupelmus azureus, which, as he says, is probably hyperparasitic; and Hartig gives Neuroterus (Ameristus) parasiticus as parasitic in the gall of this species. Another year I hope to see which of these we have in Britain.—*E. A. Fitch.*

Fig. 31.



A. AUTUMNALIS. In situ: *a*, detached.

31. *Aphilothrix autumnalis*, Hart.—There is much similarity between the gall of this and the last-described species. Like that, more than half is covered with bud-scales: it is, when fresh, of a green colour, and has beneath the scarf-skin a thin fleshy reticulation, and at the summit a small round wart. It differs from the gall of A. globuli in its more oval or prolate form; in its being from three and a half to five millimetres long, and having a diagonal diameter of two and a half to three and a half millimetres; in the surface of the inner gall having no reticular rings, but blunt, longitudinal striations, which also show on the surface of the brown gall, for in the process of drying the thin fleshy layer adheres closely to the inner gall. According to Hartig this gall does not burst forth from the bud till the beginning of October, and falls to the ground in the middle of the same month. I have only found it once, but have had several fresh specimens sent to me by Herr Tschek, of Piesting.—*G. L. Mayr.*

This gall, I believe, occurs in Britain; but owing to the great confusion existing about the various bud-galls, I think the less said about this rather obscure species the better, *at present.—E. A. Fitch.*

On Capturing, Killing and Setting Hymenoptera.—[The following recommendations and suggestions are by Mr. Frederick Smith, of the British Museum, and are published in the 'Entomologist's Monthly Magazine' for August. I have, perhaps, captured, killed and set more British bees than any man living, and therefore am qualified to express an opinion on Mr. Smith's method. Mr. Smith's observations are elicited by a previous paper of Dr. Kriechbaumer's, the advice given in which Mr. Smith by no means inclines to follow. After criticising somewhat severely the Doctor's method, Mr. Smith proceeds as follows, and I bear most willing testimony to the value of his advice. It comes here very appropriately as a sequel to Mr. Fitch's recommendations in the case of gall-flies, which appeared in the July number of the 'Entomologist.'—*Edward Newman.*]

"I will, as briefly as I can, describe my own method of capturing and setting Hymenoptera, and leave it for Hymenopterists to try both methods, and make known their opinions which is the better. I capture my insects with a bag-net (when I consider a net necessary, because I really capture three-fourths with my fingers) made of the very finest white net that is manufactured, twenty-two meshes to the inch: this is only to be procured at a few of the best shops in London. When collecting, I carry a good supply of the best block pill-boxes of different sizes, packed in a flat tin case that fits a satchel; this prevents the boxes being crushed in travelling to my hunting-ground. On arriving there I transfer the boxes to the right-hand pocket of my coat. When I capture an insect in my net I select a proper-sized box, take off the lid, and secure the insect in it against the side of the net; then, with a little manipulation, I put on the lid. The insect is now quite uninjured, with not a hair on its body ruffled. Each capture I thus secure in a separate box. These boxes I put into the left-hand pocket of my coat; and when I have filled a number, or have taken some great rarity, I put them back into the tin case; if a rarity, I frequently put the box in which I first secured it into one a size larger. Before starting on an excursion I examine all my boxes, to be sure that the lids fit closely; if they do not, a strip of paper pasted round the rims makes them secure. On arriving home I proceed to kill the insects: I take first the largest boxes used and raise the lids on one side, so as to leave a very narrow opening to admit the fumes of sulphur; I then pile the boxes one upon another in a pyramidal heap, and over the pile I place a bell-shaped glass, usually six inches in diameter, but the size will vary according to the number of boxes; I then take a little powdered sulphur on the end of a thin piece of flat wood (a match in fact), light the sulphur, and place it beneath the bell-glass,—this process will sometimes require repeating once or twice, until the sulphur will no longer burn beneath the glass; it is then sufficiently charged. In this condition I leave it for about half an hour. I then empty the contents of the pile of boxes into two or three larger ones, recharge the bell-glass, under which I place the boxes of insects, and leave them until the following morning: the insects will then be in a proper condition for setting. Every insect will be found in the most perfect condition: pubescent ones, such as humble-bees, have not a hair disturbed, and they can be pinned without a chance of any liquid *oozing out of the thorax* and matting the pubescence. My method of setting and drying specimens is as follows:—For the latter process I use a drying-cage, with door and back covered with net (perforated zinc would answer as well, if not better): the cage has several setting-boards resting upon slips of wood, and corked on one side, the cork being half an inch thick, thus allowing the insects to be pinned at a proper height. The setting process is very easy and simple: having run a pin through the thorax, slightly before the middle of its disk, I mount it on to the setting-board, running the pin into the cork, until the under side of the thorax very nearly touches the cork; the next thing to be done is to arrange the legs in a natural position by the aid of fine plyers and setting-needles, securing the limbs in position, when necessary, with pins; on each side of the specimen I place a table for expanding the wings upon; this is simply a strip of good, stout Bristol-board, that is, stout card. These tables must be of various sizes, and used according to the size of the wings of the insect. Having fixed the tables firmly, I place the wings upon them with a setting-needle, and having, by a little manipulation, if necessary, hooked the wings together, push them forwards into the required position, holding them there with a needle, until, with a brace made of a strip of card shorter than the table, and pierced through at one end with a pin, the wings are secured in their proper position. The last process is to arrange the antennæ. This can sometimes be done by placing them on the end of the table on which the wings are spread; but, in the majority of cases, it must be done with pins. The time necessary for insects to remain on the setting-boards depends upon a variety of circumstances. I am here alluding only to insects recently caught. In the height of summer, if dry and hot, a fortnight may do for small or slender insects, but I seldom remove any so soon. Bombi should, even in hot, dry weather, remain at least a month, and at other times must be left five or six weeks, or the wings will be apt, in damp weather, to fall out of position."—*Frederick Smith*.

Life-history of the Pear-tree Slug. By EDWARD NEWMAN.

THE "potato-bug" seems reluctant to cross the Atlantic, and the panic it engendered is dying out, in spite of the energy which some practised scribe or expert conversationist will occasionally strive to maintain or renew the excitement. As if purposely to avail itself of the procrastination of this coy and somewhat problematical mischief-maker, a real insect grievance has taken up its abode in our midst, and seems to demand serious attention. The pear-tree slug is a reality, tangible, palpable, visible, smellable,—for it appeals most forcibly to the olfactory organs.

Mr. Fitch, to whom allusion will be made again hereafter, in defence of the slug against this charge, thinks that the smell is only emitted under circumstances of provocation, and may possibly be protective only,—a sort of warning to the aggressor not to taste a creature whose scent is so offensive, lest he should find the flavour as repugnant to his palate as the odour to his olfactory organs. This kind of protection is possessed by the larvæ of many other sawflies.

Complaints as to the burnt-up appearance of our pear-trees, —and, by the way, of our cherry-trees as well—inquiries as to the cause; and a plethora of infallible remedies, with polysyllabic and for the most part unpronounceable names, have found their way into all our advertising columns and wrappers; yet year after year the plague seems to increase and spread.

My object in penning these notes is to bring the creature face to face with his victims,—those who, in the west and south-west of England, annually lose their pears and their perry through the instrumentality of these insects; for unless we know our enemy—his appearance, his ways, and his whereabouts—all our attempts to compass his destruction must be futile. We have all heard of the nocturnal slaughter of sheep in Algeria, and of the cunning devices to eradicate the enemy, to stamp out the aggressor, and thus allow the persecuted sheep a respite. Large sums were raised, fertile brains were worked, and engines of all forms and on all principles were constructed, with a view to compass his destruction; nothing was omitted that ingenuity could suggest, valour inspire, or wealth procure. One thing, however, was forgotten; and that was to identify the ovicide. No one had deigned to inquire what particular beast, bird, or reptile, evinced this kleptomania for mutton; so that lion and leopard, hyæna and jackal, vulture and eagle, shared the opprobrium about equally among them; until the hunters, on going the round of the traps at early dawn, found a party of Bedouins squatting on their heels, with mutton on their knees, mutton between their fingers, and abundant evidence of mutton slaughter and mutton cookery unmistakably around them. Then came a revulsion of feeling; then the tide of subtle strategy and impetuous bravery was diverted into another channel. Even before accident supplied me with this apt illustration of my theme, I had arrived at the conviction that it is desirable to ascertain your enemy before "trying conclusions" with him; and it is in this spirit that I invite attention to the life-history of the pear-tree slug.

And here let me state *in limine* that the earliest, best, most complete, and most accurate account of this objectionable insect was written by Professor Peck, and was printed at Boston, U.S., at the very end of last century, by order of the Massachusetts Agricultural Society. This body awarded fifty guineas and a gold medal for the memoir, which it is now difficult or impossible to procure. Dr. Harris, however, one of the most eminent of American entomologists, has given us the substance of this essay at p. 418 of his 'Treatise on Insects Injurious to Vegetation.' This second account, with some abbreviations and modifications, has been adopted by all subsequent writers; and its chief points are incorporated in the present memoir, not, however, unadvisedly, or without a careful study of the insect in a state of nature. I have also to acknowledge the great assistance I have received from Mr. Edward A. Fitch, one of the best observers of insect life-history that ever lived, and one who has laboured, and is still labouring, most efficiently in the elucidation of our British oak-galls.

In June the mother-fly emerges from the earth in which she had voluntarily buried herself. Her first thought, like that of our own female relatives, is matrimony; and doubtless her powers of attraction, as with us, are taxed to the uttermost; but in what manner they are exercised philosophers have failed to discover. Her second thought, or instinct, or duty, is preparing for a family. A word as to her personal appearance: she is always in mourning; even before matrimony she wears the sable garment of widowhood; her head, antennæ, body and legs are almost entirely clothed in black; her wings, otherwise colourless, wear a blackish shade across their middle. Her native tree in this country is the sloe. By beating a sloe-bush, at the beginning of June, into a net or umbrella, after the manner practised by entomologists when thrashing for caterpillars, you may obtain some of these little black, and seemingly lifeless, creatures, which are about the size of a grain of wheat. If they fall into the umbrella—held of course upside down—they will roll over and over to the bottom of the concavity, and there lie perfectly motionless; of course their object is to assume the semblance of death, so as to deceive the uninitiated. A great number of insects have this habit of feigning death, evidently with the object of rendering their appearance unattractive, and themselves unrecognisable to those other insects, or animals of any kind, which make living insects their customary food. As though purposely to aid in this life-preserving, and therefore very excusable, deception, their bodies are so fashioned that by bending their heads downwards beneath their breasts, pressing their antennæ, legs and wings closely against the body, and resolutely abstaining from all movement, the whole appearance becomes so inorganic that even the sharp, prying eye of a bird would be deceived, and the delicate, discriminating touch of a spider would fail to detect life under this mask of death. Some insects have a special provision for this manœuvre; as in those many-bladed knives which are the delight of schoolboys and the terror of timid mothers, each of the limbs fits with the greatest nicety into a groove purposely fashioned to receive it. If you examine a pill-beetle (Byrrhus), while it is shamming death in this way, you will find it so compact and pill-like that you are quite unable to distinguish the legs from the body until the creature condescends to crawl, and thus reveal the secrets of its structure. Notwithstanding this love of concealment, one or other of the roving males, similarly coloured to the female, but of a far more volatile disposition, is sure to find her, and impregnation and maternity follow as matters of course. Then she may be seen in the act of oviposition,—on a sloe-leaf in the hedges, or a cherry-leaf in the garden, or a pear-leaf in the orchard,—and a serious matter she makes of it. So serious and so intent is she in the performance of this maternal duty, that you may sometimes take her off the sloe-leaf between your finger and thumb. She will evince no disposition to fly, make no effort to run, but only resort to the expedient of feigning death,—an expedient that facilitates her capture rather than otherwise, especially if you hold one hand beneath the leaf on which she is operating, in order to arrest her fall. I need scarcely say that this insect is a member of the great family of sawflies,—a family that has long attracted the attention and admiration of the entomologist; nor need I again describe the saw with which all of them seem to abrade the cuticle of the leaf, leaf-stalk, or twig, on which they deposit their eggs.

Suffice it to say that the abrasion made by the insect whose history I am relating is of a slightly-curved or crescentic form, and that the egg is laid in this abraded portion. The denuded parenchyma of the leaf thus comes into immediate contact with the under side of the egg, which is of an oblong shape, and is covered with a leathery shell, capable of considerable expansion as the enclosed larva increases in size. Thus the egg is seen very obviously to grow,—a fact familiar to entomologists, but one which ornithologists may be excused for hesitating to accept, seeing how very brittle are the eggs to which they have devoted their best attention. This faculty of growth in the egg-state was known to Linnæus, and has been recorded by all subsequent writers on this tribe of insects. To criticise or contradict observers so careful as Professor Peck and Dr. Harris is out of the question; but there is one point in which I differ from these most observant and accurate entomologists. Both Peck and Harris either state, or lead us to infer, that the egg is laid and that the larva feeds on the *under* side of the leaf. My own experience is exactly the reverse of this, and agrees with that of the Rev. Charles Bethune, as given at p. 51 of his 'Annual Report of the Entomological Society of Ontario,' which I have lately received through the courtesy of my kind friend Mr. Reeks, of Thruxton. My experience agrees with Mr. Bethune's; I find the larvæ on the *upper* side of the leaf. This want of accord may probably arise from there being several species confounded under one name, and three of them I had named provisionally after the trees on which I found the slug feeding:—Blennocampa Cerasi on the cherry, B. Pruni on the plum or sloe, and B. Pyri on the pear. I find, however, that I am unable to differentiate these in a manner likely to find acceptance with entomologists. I therefore prefer adopting "Æthiops" as a specific name for all our slug-worms, at the same time expressing a feeling of some regret that the word "nigger," the literal translation of Æthiops, should have been applied to the sawfly of the turnip,—a very different insect, and one of which a complete life-history has already been given in the 'Entomologist.' Another question of some interest, as regards the geographical distribution of insects, arises as to the identity of the slug-worms of Europe and America. There is, however, no necessity to introduce this difficulty to the reader, unless it be to say that the three are so similar that I am unable to separate them.

To proceed with our life-history of the one which feeds on the pear-tree. The eggs continue to grow during thirteen days; at first slowly, towards the end of that period more rapidly. On the fourteenth day, according to Professor Peck, the young grub emerges from the egg. I have no doubt this statement is correct as regards the United States, but I cannot say that I have verified it in England. On first emergence they are white or colourless, but in a very short time they are covered with a black, brown, or olive-coloured jelly, of offensive scent and disgusting appearance. Although Peck, Say, Harris, Bethune and others in America, De Geer, Réaumur, Bouché, Hartig and many others on the continent of Europe, and Mr. Westwood in England, have written on this loathsome grub, and although I have read their observations with the attention they merit, I cannot say that I thoroughly understand the mode in which this jelly or mucilage is produced: it accumulates on the surface of the skin, until the creature becomes a dark mass without apparent life, or even organisation. The slugs are first observable at the beginning of July,—then of course very small; and a succession continues to make its appearance, and to infest the leaves of sloe, pear, cherry or service, throughout August and September, and often far into October. They glide with extreme slowness over the surface of the leaf, and partly by means of claspers, a pair of which are attached to the under side of every segment, except the 1st, 4th, and 13th. These claspers seem to possess little of that prehensile property which is so striking a character of the claspers of the caterpillars of moths and butterflies. In addition to the claspers, fourteen in number, which are situated on the under side of the abdomen, there are six articulated or thoracic legs. These, as well as the head, are invisible, except when the creature is crawling or feeding; indeed, these so-called organs of locomotion are concealed by the body and its concomitant slime or jelly, and their office seems to devolve on the annular segments of the body, which, by alternate dilation and contraction, effect the desired object. This phenomenon is observable in the larvæ of many other insects, particularly in those which are apparently apod, such as the maggots of flies and some Curculionidæ. The body is somewhat swollen at the anterior extremity, and gradually attenuated towards the posterior, which is slightly raised,—a character frequently observable in this family of insects, as well as in the cuspidate Lepidoptera. During the greater part of their larval existence, these slug-worms seem quite destitute of that rambling propensity which is commonly observable in the larvæ of Lepidoptera; indeed, in them, rambling would be useless, since the upper cuticle and the parenchyma of the leaf, which constitute their principal food, are always within reach without the trouble of moving. These they consume in a very methodical manner, leaving the lower cuticle entire; this very soon dies, withers, and turns brown, making the whole tree look as though covered with dead leaves.

The process of exuviation, or casting of the skin, obtains in this, as in all other larvæ. Before it is performed the little slug wanders about the leaf with more freedom of movement than usual; it is no longer glued, as it were, to the cuticle. After the skin is cast the slug may be seen licking its old coat, an occupation which seems particularly enjoyable. The mandibles are also incessantly and actively at work; yet the cast clothing does not entirely disappear, although it is certainly diminished: the anterior part seems to be eaten, the hinder part neglected. This observation is made in consequence of the well-known propensity of certain lepidopterous larvæ to make a meal not only of the egg-shell from which they have just emerged, but also of the garments, which are from time to time thrown aside in favour of a new suit. What a saving might be effected if we humans could thus utilise our old clothes instead of feeding on beef and mutton, the price of which seems gradually advancing towards a point which will render the use of such viands impossible. The changing of the skin takes place in America five times. I cannot say that five is the number of ecdyses in England, as I have not counted the new suits worn by English slug-worms. At the last change the slug loses its jelly-like surface, and appears in a neat yellow skin without any viscidity. This occurs nearly a month after their first escape from the egg-shell; the head and segmental divisions are now quite as perceptible as in any other species of sawfly. Henceforward it eats no more, but crawls down the trunk of the tree and buries itself in the earth: at the depth of three or four inches, each forms a neat little oval cell, in which to undergo its final changes to a chrysalis and perfect fly. This cell is formed of earth, but is lined and intermixed with liquid glue secreted in the stomach, and ejected by the mouth. This liquid glue is obviously nothing more than silk in a liquid state, —a preparation with which the larva of nearly every moth, butterfly, hymenopteron, or coleopteron, is provided more or less abundantly, and one which is always applied to the fabrication of a cocoon, cell, or covering of some kind in which to undergo its transformation. When this gum has once hardened, and assumed its final state of leather-like toughness, it is insoluble in water, and forms a perfect protection from wet. In this cocoon the grub resides during the remaining portion of the autumn, also during the entire winter, and until the following summer: it is contracted in size, but otherwise unchanged in character. Its change to a necromorphous chysalis does not take place until spring has far advanced, and then that state is but of short duration: fourteen or twenty days suffice to mature the perfect insect, and at the expiration of this it emerges from the tomb, and the same cycle of existence is recommenced and recompleted as before.

I believe every leaf-eating insect has its parasite,—its appointed enemy, whose office in creation is to keep the leaf-eater in check, and thus maintain the balance of nature. Were it not thus, so vast would be the destruction of vegetation that man himself must perish in the fruitless struggle to maintain life. These insidious parasites, and faithful allies of man, are Hymenoptera, insects of the same class as the flies produced from the slug.

A word remains to be said about the supposed remedies; and here I must confess that I am at fault. In England we trust too much to the inventive genius of chemists and druggists. Whenever these gentlemen offer for sale a preparation which they have previously called by some cacophonic name, the little republic of cultivators is delighted to buy, delighted to be taken in, and delighted to grumble at the inefficacy of the nostrum; and so ends the amusing comedy. In America it is somewhat different; our Transatlantic cousins, having made themselves thoroughly acquainted with the enemy, have had recourse to practical measures with a view to compass his destruction. Sand, ashes, lime, and powdered hellebore, have been tried with great energy; but the last only has been found reliable. The results of these experiments were recorded in the September number of the 'Canadian Entomologist' for 1870.

As soon as the slugs were observed at work in spring they were treated to a plentiful supply of dry sand, thrown up into the higher branches with a shovel, and over the lower ones through a sieve. The sand stuck thickly to the slimy skins of the grubs, completely covering them. Supposing the enemy conquered, no notice was taken of him for some days, when he was found to have recovered from the assault, and to be as vigorous as ever. It was then determined to test the sand experiment on a smaller scale. Several small branches of pear-trees were selected and marked, on each of which were six slugs, and these were well powdered over, and completely covered with sand. On examining them it was found that they had shed their sand-covered skin, and had crawled out as slimy as before. The sand was applied a second and a third time, with similar results. Ashes were next tried in the same manner as the sand had been, and were found equally ineffectual. Seeing then that sand was useless, the slugs were treated to a strong dose of hellebore and water, which soon finished them. Another experiment was tried with a solution of hellebore, and is thus reported:—

"On the 13th of August, at 8 A.M., a branch of a cherry-tree was plucked, on which there were sixty-four slugs. This branch had only nine leaves, so it may be supposed it was thickly inhabited. A dose of hellebore and water was showered on them, about the usual strength,—an ounce to the pailful,—when they soon manifested symptoms of uneasiness, twisting and jerking about in a curious manner. Many died during the day, and only six poor sickly-looking specimens remained alive the following morning, and these soon after died. During the past season (1870) these slugs have been unusually abundant on our pear-trees, in many cases destroying the foliage so thoroughly that they looked as if they had been scorched by a fire, every leaf in some instances dropping from the trees, so that for a time they were as bare as in mid-winter. Nearly a thousand trees in the young pear orchard of the writer suffered severely. During the latter part of June and the early days of July we had no opportunity of inspecting these trees; and when we visited them on the 7th of July they were so much injured that we thought they could not be much worse; and, as the slugs were then full grown and fast disappearing, and as the application of a remedy to so many trees was a matter of so much labour, nothing was attempted to remedy the evil."

Then follows a list of the pear-trees injured; and from this it appears that some varieties suffered much more severely than others. In the course of a fortnight after these observations were made, new leaves began to push out vigorously on the defoliated trees, and within a month or six weeks all was green again.

"In the meantime," says Mr. Bethune, "the mischief-makers were preparing for a second descent, and we in our turn were preparing to receive them. On the 29th of July, when going through the orchard in the afternoon, the new brood of flies were found in the greatest abundance, resting on the young leaves and on those portions of green which still remained on the leaves partially eaten by the last brood. They were congregated, however, most thickly on those trees where green leaves were most abundant. On disturbing them they would fall to the ground, with the antennæ bent under the body, and the head bent downwards. . . . . . We caught sixty specimens, and might have taken hundreds: they were so thickly spread that in many instances there were two or three on a single leaf. By the last week in August the second brood of slugs were hatched. Now those trees which had previously escaped were all more or less infested. . . . . . A raised platform was rigged up in a one-horse cart, in which was placed a barrel of water in which a pound of powdered hellebore had been mixed; and from this elevated stand this mixture was showered lightly on the trees from the rose of a watering-pot. It was astonishing how quickly the trees were cleared by this method: scarcely a slug could be found on a tree the morning after the application had been made; and ten pounds of hellebore, with five or six days' work of a man and horse, served to go over the whole ground."

Powdered hellebore has been successfully tried in England on a small scale; but there is an apparent difficulty in raising the water to a sufficient height to be of much service among the giant pear-trees of Worcestershire and Herefordshire. Still I would by no means discourage the attempt.

In a scientific point of view it would be interesting to ascertain the identity or otherwise of the "slugs" of Europe and America, and to ascertain also whether the slugs had migrated, either naturally or through the instrumentality of man, from the old to the new continent, or *vice versâ*. It is stated, and I doubt not on good authority, that there are two broods of this mischievous insect in America. At present we know of but one in Britain. Let us hope that a second may not hereafter reveal itself.

EDWARD NEWMAN.

Peckham, October 10, 1875.

Entomological Notes, Captures, &c.

Obtaining Eggs from Captive Lepidoptera.—In the 'Canadian Entomologist' for September Mr. T. L. Mead, of New York, gives a description of a simple and easily-constructed cage for keeping the females of Lepidoptera in health and vigour until the eggs are deposited on the food-plant. As the method in some of its details is new to me, I thought it might also prove so to some of your numerous readers, and therefore copy that portion of his note *verbatim*. Mr. Mead says:—"A notch is cut in the side of an empty wooden-box, through which a branch of willow or other appropriate food-plant is passed, care being taken to select a leafy spray, so as to partially fill the box with foliage. It is then covered with gauze, tacked fast on one side and part way on the adjoining sides, that on the fourth side being held down by a piece of wood fastened to the remaining flap of gauze. This renders easy the examination of the contents at any time. Now, a saucer of dried apples, sugared and partly filled with water, is put in, and the cage is complete. Butterflies, like Limenitis Arthemis, will live in such a vivarium for two weeks and more after their capture, and appear to enjoy the food provided immensely, laying many more eggs than if enclosed in a bag and allowed to perish of hunger and thirst. I have often captured specimens and dropped them in upon the pile of dried apples: instead of fluttering about and endeavouring to escape they instantly unrolled their tongues, and feasted for several minutes upon the repast prepared for them without a motion of the wings."—*Henry Reeks; Thruxton, October* 19, 1875.

Varieties and Deformities.—From time to time the pages of the 'Entomologist' are illustrated either by pen or pencil,—sometimes both,—with so-called "varieties" of our native Lepidoptera, and in almost every instance the specimens described differ from the normal type of the species, either in the distribution of *colours*, or in intensity of shade or markings. Occasionally we read of dwarf specimens, or, on the other hand, specimens of gigantic proportions, but we seldom see any account of a deformed individual; and by deformities I do not mean the poor, crippled creatures we sometimes get in our rearing-cages,—although perhaps they should claim the appellation, "par excellence,"—but those in which one particular limb, although fully developed, differs from the corresponding one. That such deformities do occur we are all well aware; I think they are sometimes not totally uninteresting to those who really love insects for their own sake. Last summer I and a friend were searching for Acidalia straminata, and whilst near a fir-wood a moth attracted my attention by its peculiar flight. I caught and boxed it, to find it was a specimen of Ellopia fasciaria, with one of its hind wings about *half* as large as the opposite one, although this dwarfed limb is apparently fully developed, and has the red bar across it similar to the other, but the wing being shorter than usual the bar is naturally nearer the body; consequently the moth looks very one-sided now it is set. I have yet a still more remarkable "deformity" in my cabinet in a male of Colias Edusa. The specimen in question has both fore wings narrow and rounded, almost reminding one in form of the fore wings of Lithosia quadra. Its colours are not so bright as other specimens in my series, but the markings are similar; and on account of the wings being so much narrower the black spot appears to be almost equidistant from the costal and inner margins. Doubtless many readers of this journal possess specimens equally interesting and curious; but, in nineteen-twentieths of the varieties described, the variation is in colour, and not in form. This I almost wonder at, since the acquisition of varieties is, and has been, such a mania with collectors, and almost anything out of the common course of nature is deemed a prize.—*G. B. Corbin.*

[I am rather pleased that any correspondent of the 'Entomologist' should have observed, what is a fact, the general absence from its pages of notices of deformity. I entirely agree with the spirit that suppresses all notice of deformity among mankind, and am well pleased to see the same forbearance exercised towards the world of animals.—*Edward Newman.*]

Abundance of Colias Hyale in Suffolk.—I have been surprised not to see your natural-history columns crowded by your entomological correspondents with notices of the occurrence of that, to me, rare butterfly, Colias Hyale. Both it and its near relative C. Edusa have occurred abundantly—the former exceedingly so—in East Suffolk during the last three weeks. A brother of mine, who is collecting, took several specimens of each. I am curious to know if East Suffolk is the only district that has been visited.—*H. J. Rope; Blaxhall, Wickham Market.* [*From the 'Field.'*]

Colias Edusa, C. Hyale, Sphinx Convolvuli, and Catocala sponsa, near Petersfield.—I took here, on September 30th, a rather worn specimen of Sphinx Convolvuli: it was at rest in some long grass when I found it. I also took at sugar here, on August 9th, a fair specimen of Catocala sponsa; and on September 18th, about five miles from here, a good female Colias Hyale. I have also taken this autumn ten specimens of Colias Edusa, of which only two were females.—*Waldegrave; Blackmoor, Petersfield, Oct.* 18, 1875.

Colias Hyale and Sphinx Convolvuli near Birmingham. On the 13th September I captured a good specimen of Colias Hyale near the Ran Dan Woods, about thirteen miles from Birmingham, while out shooting; and on the 23rd I saw one on the wing at Shirley, about six miles from Birmingham. On the 24th I had brought to me a very large specimen of Sphinx Convolvuli, having been captured in a greenhouse in some neighbouring nursery-gardens; and two others at the same time were captured on the outskirts of the town. Both species are exceedingly rare in this neighbourhood, and I never remember having seen either before.—*Walter Ludlow; Solihull, near Birmingham.* [*From the 'Field.'*]

Colias Hyale, C. Edusa, and Sphinx Convolvuli, at Hitchin.—Seven specimens of Colias Hyale and four of C. Edusa have been taken by the boys in this school within the last month. They were all taken on the Midland and Great Northern Railway embankment, a little to the north of Hitchin Station. Two gentlemen have taken specimens of

Sphinx Convolvuli here lately, one of which has come into my possession; and another has been found in the garden here.—*John Grubb; The Woodlands, Hitchin, September* 25, 1875.

Colias Edusa and Sphinx Convolvuli at Hendon.—On September 13th a male Colias Edusa was taken in the garden here by my friend Mr. Brown; and on the 26th, a fine female Sphinx Convolvuli was brought me: it was found at rest on a post. In the evening of the same date I took a male, as it was hovering over a bed of scarlet geraniums.—*R. South; Goldbeater's Farm, Mill Hill, Hendon.*

Sphinx Convolvuli, Colias Hyale and C. Edusa abundant at Ipswich.—Sphinx Convolvuli has been very plentiful here throughout September; and Colias Hyale and C. Edusa have swarmed everywhere.—*C. F. Long; Borough Asylum, Ipswich.*

Lycæna Acis near Cardiff.—Four specimens of Lycæna Acis were taken near Cardiff last year, and one more this year by Mr. Williams, of Marlborough College, one of which is in my possession.—*N. Manders; Marlborough College, Wilts.*

Deilephila Galii at Weybridge.—My brother and I caught two specimens of Deilephila Galii here, in August, several years ago. They were flying over such flowers as verbenas, geraniums, &c. I have recorded this because I believe the moth is rare.—*Oswald Milne; Weybridge, Surrey, October* 9, 1875.

Sphinx Convolvuli in Guernsey.—This fine hawk-moth has been unusually abundant in Guernsey this autumn. The first specimen was brought me on August 26th by a little girl; she had found it at rest on the arcade steps. On August 28th another specimen was brought in a chip-box; but, as may be supposed, it was too much battered to be of any use as a specimen. September 6th, a boy brought a fine specimen, taken on the window of a house in Pedvin Street. September 16th, a lady collector brought me a fine specimen to kill for her; and on the same day a friend sent me a fine specimen, which had been taken in King's Road. September 17th, a specimen brought, taken on the door of a house in Mount Durand. September 18th, my friend Mr. Derrick called to tell me he had been informed by a lady that Sphinx Convolvuli were very abundant in her garden in King's Road, hovering over honeysuckle at dusk, and that we were kindly invited to see them. We determined to capture some if possible, so repaired there that same evening. On one of the garden-walls was a large quantity of honeysuckle in full bloom, which was evidently the attraction. We stationed ourselves in front of it, net in hand; we had not long to wait before they began to put in an appearance; and after several unsuccessful attempts we succeeded in capturing five. We were told that two cats belonging to the house stationed themselves on the wall regularly every evening watching for these moths, and often succeeded in capturing them. September 23rd, a specimen was brought me, very much worn and wasted. September 24th, we again visited the honeysuckle in King's Road; and, although it was almost blowing a gale of wind, succeeded in taking one moth. Besides the above captures, which have come under my more immediate notice, I have heard of the following:—Two were taken at rest on a white sheet hanging in a garden in Mount Durand; the captors, thinking them very beautiful, pinned them alive on some wax-flowers under a glass-shade, thinking, no doubt, that the insects would die in a very short time; both insects and flowers must have been greatly improved. Another specimen was exhibited in the window of a boot-maker's shop in Smith Street; and a gentleman living in Candie Road found one crushed on his garden-walk. My friend Mr. Cumber has also given me the following list of captures, most of which have been added to his collection:—Two taken in the sick-ward and one in the yard of Town Hospital; two in a garden in Brock Road; one at rest on a greenhouse, near Victor Hugo's house in Hauteville; one at rest on a railing near Salarie Battery; and one on a street-door knocker. A full-grown larva was brought me from Alderney on October 14th, and has been forwarded to Mr. Newman to describe in the 'Entomologist;' and I am informed that a great number of specimens of the perfect insect have been captured there this season.—*W. A. Luff; Guernsey.*

Description of the Larva of Sphinx Convolvuli.—Opportunities of examining the larva of Sphinx Convolvuli are of such rare occurrence in this country that I was delighted to avail myself of Mr. Luff's kindness in sending me a specimen. It was by no means what the various figures and descriptions had led me to anticipate; indeed no description I had read had given me any idea of the reality. The entire absence of oblique lateral stripes at first induced the conclusion that some mistake had been made in determining the species: this idea, however, was soon dissipated, and was speedily followed by the conviction that I had the larva of Sphinx Convolvuli before me. The face when the creature is at rest is held nearly in a vertical position; the mouth, however, is inclined slightly backwards towards the feet, which are inclined forwards. It is very slightly convex, and notably narrower than the 2nd segment, which partially receives it: this segment is narrower than those which follow, and which are of nearly equal substance to the 13th, and this is evidently less than the rest, as usual in larvæ; on the 12th is an arcuate, decurved, caudal horn, which is moderately stout at the base, and tapers to an acute point; the body is transversely wrinkled, and has manifest incisions separating the segments. The colour of the head is green, with a slender black line between the cheeks; this forks at the lower extremity and includes the mouth; each cheek has two longitudinal black stripes, whereof the exterior on each cheek slightly exceeds the interior both in length and breadth. The body is bright apple-green, with six longitudinal series of black spots, and a narrow black medio-ventral stripe commencing on the 5th segment and terminating on the 12th; this narrow stripe is interrupted between the 5th and 6th segments, and also between the 6th and 7th: the medio-dorsal area is without black markings, and the sub-dorsal area has a distinct series, one on every segment, excepting the 2nd, 5th, and 6th; each spot is seated in the incision between the segments, and is therefore double, part on the preceding, part on the following segment; the anterior portion pointed and slightly oblique, the posterior portion rounded: the last of this series on each side is linear, oblique, and continuous with the caudal horn, which is chestnut-brown with a black tip: the second series of black spots on each side is lateral, and situated exactly half-way between the series already described and the spiracles; in position these spots alternate with those in the sub-dorsal series: the third series of black spots on each side is spiracular; each spiracle is oblong and black, and is surrounded with a very delicate pale circumscription; each spiracle forms the centre of a nearly circular black spot; the nine spiracles thus surrounded form the third spiracular series: the medio-ventral line, already described, is dilated into a black blotch between each pair of abdominal claspers; the legs are black and shining: the claspers are pale green, with black, curved and prehensile ciliæ; each has a black spot on its outer side. This larva was found in Alderney, feeding on the leaves of the large bindweed, Convolvulus sepium. The specimen buried itself on the 14th of October, and so remains. I will now say a few words about a pupa of the same species, dug up in a potato-field at Deptford, and now before me. This is two inches and an eighth in length, and of proportionate thickness: the case containing the maxillæ is transversely marked, as if with rings; it is perfectly detached from the body, except at its insertion; it is parallel with the body for two-thirds of its length, and then, after nearly touching the leg-cases, is bent inwards and upwards, and terminates in a blunt extremity; the anal extremity of the pupa is obtuse and scabrous.

The extraordinary abundance in which this species has appeared this year, as recorded in the pages of the 'Entomologist,' is only equalled by the records in the 'Zoologist' for 1846, when it appeared throughout the length and breadth of the kingdom. Taking the records alphabetically, we find it occurred at Aylsham, Blackheath, Bridlington, Camberwell, Carlisle, Chipping Norton, Chelmsford, Clonmel, Dunmow, Faversham, Hackney, Hessle-on-Humber, Hull, Huddersfield, Hythe, Kingsbury, and a variety of other places in the vicinity of London, Leyton, Leicester, Norwich, Nottingham, Preston, Reading, Sudbury, Tooting, Tunbridge, Uppingham, Winchester, York, and Yarmouth: in the last-named locality it is reported to have occurred "in immense quantities," one person having taken fifty-seven, and enormous numbers having been seen on Caistor Marrams, a sandy district by the sea-shore. The interval of twenty-nine years, between 1846 and 1875, did not pass without the occurrence of Convolvuli being occasionally noticed; and I find captures of the insect recorded in almost every volume of the 'Zoologist' or 'Entomologist' until this year. In 1868 it appeared in abundance on the Norfolk and Suffolk coast, more particularly at Aldeburgh, as recorded in the 'Field' newspaper. Its profuse occurrence on the eastern coast in 1868, coupled with its abundance in Guernsey during the present year, seems to favour my theory that our rarer Lepidoptera are frequently "blown over" from the Continent. The speed at which a Sphinx can travel, even when unaided by the wind, is truly marvellous, and when assisted by a favourable breeze it may perhaps be greater still. I see my friend Mr. Biggs combats this idea.—*Edward Newman.*

Sphinx Convolvuli.—This insect must have occurred very abundantly this season, as since my last communication I have obtained seventeen more, nearly all in good condition; and, including those taken by others, upwards of sixty have been taken in the same locality, all flying over the blossoms of marvel of Peru, which seems specially attractive to them. How to account for their occurrence in such numbers is a puzzle; but I think the greatest evidence against the migratory theory is that some of the specimens caught last were in the finest condition, which would seem to indicate a succession of freshly-developed insects. As far as I have observed the insect is rather shy in its habits and easily startled, as I noticed that when struck at and missed they went right away, and seldom or never returned to the same spot to feed. They did not seem to have much partiality for light, as when the glare of a lantern was turned on them they invariably receded from it; but I have seen them flying in the most brilliant moonshine, when you required no lamp to distinguish them. The majority of the specimens taken were females, and several of those I examined contained no eggs. The last specimens I know of were captured on the 1st of October. I visited the spot several favourable evenings after this, but saw no more of them.—*C. J. Biggs; South Hackney, Oct.* 19, 1875.

[The absence of eggs in the ovaries of many of the females of the larger Sphingidæ has been fully noticed by Mr. Doubleday in the 'Zoologist' (Zool. p. 1862), by myself in the 'Entomologist' (Entom. ii. 263), and by Mr. Biggs in the above communication. In such cases the abdomen is perfectly empty, a mere hollow cylinder; and the same phenomenon has been observed in some of the Noctuidæ. This absolute sterility among the females of Sphinx Convolvuli amounts to a very large percentage: seven out of eight having been found in this condition. The proportion of sterile females of Acherontia Atrpos is smaller, but still very considerable; it has not been ascertained with any degree of accuracy. Well, then, how is the race continued? Do the few fertile females deposit their eggs in the autumn during the great festival of honey-sucking? or after honeysuckle, marvel of Peru, petunias, verbenas and geraniums have been laid under contribution, and the pregnant female nourished with an abundant supply of sweets? According to the concurrent testimony of continental entomologists the eggs are laid and the larvæ are hatched in the autumn, the latter feeding up quickly, and retiring beneath the ground before the winter has deprived them of the means of sustenance: it will be found that there is abundant time for this state of maturity to be attained. A few moths may remain undeveloped until spring; but I take it a vast majority emerge at the end of August or during September of the following year. —*Edward Newman.*]

Sphinx Convolvuli at Maldon.—Sphinx Convolvuli has been found about here tolerably plentiful, my pupils having secured about a dozen specimens. Also Colias Hyale has been about here in the lucerne-fields.—[*Rev.*] *J. W. Mills; St. Lawrence Rectory, Maldon, Essex, October* 11, 1875.

Sphinx Convolvuli at Winchmore Hill.—On the 18th of September one of the national school-boys here brought me a perfect specimen of Sphinx Convolvuli.—*D. G. Lathom Browne; Uplands, Winchmore Hill, October* 1, 1875.

Sphinx Convolvuli in the West of Scotland.—The West of Scotland must be included among the numerous lists of localities which have this year been visited by Sphinx Convolvuli. I have just received one, which was caught in a greenhouse at Row, near Helensburgh.—*J. H. Pearson;* 208, *St. Vincent Street, Glasgow, October* 2, 1875.

Sphinx Convolvuli at Hazeleigh, Essex.—I picked up a mutilated specimen of Sphinx Convolvuli on a public road near Hazeleigh Rectory, on September 18th. I hear that the species has also been captured at Maldon this autumn.—*Gilbert H. Raynor; St. John's College, Cambridge, October* 14, 1875.

Sphinx Convolvuli at Hastings.—While playing croquet about the end of September last I was surprised by seeing a fine specimen of Sphinx Convolvuli hovering over a bed of geraniums. I tried to secure it, but was unsuccessful. The next evening it returned to the same spot just at the same time, and is now a specimen in my collection. A few days after I heard of another being taken in the neighbourhood.—*Rosa M. Sotheby; Sunny Side, Ore Valley, near Hastings.*

Sphinx Convolvuli at Sheffield.—I have in my possession three specimens of Sphinx Convolvuli; one taken at Dore, Sheffield, by Mr. Wolstenholme; and the others at Edwinstowe, by Mr. Fells. All found flying over honeysuckle; taken September 25th and 26th.—*John Clark; 45, Church Street, Sheffield, October* 18, 1875.

Sphinx Convolvuli at Leeds.—On September 24th a male Sphinx Convolvuli, with the end of the wings split, very well marked, was taken off a gate-post at Wortley, Leeds. On September 25th another was brought me, a fine female; it was taken in a garden on a rhubarb-leaf, at Beeston Hill, Leeds.—*C. Smethurst;* 25, *Chatham Street, West Street, Leeds, October* 20, 1875.

Sphinx Convolvuli at Darlington.—Since the last captures I communicated to you of Sphinx Convolvuli we have taken fourteen more, making thirty-three in all, but some of them are rather worn.—*John Law; Elton Parade, Darlington, October* 20, 1875.

Sphinx Convolvuli at Birkenhead.—On September 1st I had a very fine male of Sphinx Convolvuli brought to me, which was taken sitting on the railway-bank between Birkenhead and Hoylake; it looked as though it had just emerged from the pupa.—*James Povall; Heath Bank, Wallasey, Birkenhead, October* 19, 1875.

Sphinx Convolvuli at Lincoln.—On the 20th of September I had given me a specimen of Sphinx Convolvuli, which was taken on some wood by the river's side at Lincoln.—*F. A. Trafford; High Street, Lincoln.*

Sphinx Convolvuli at Croydon.—On the 24th of September I took a fine specimen of Sphinx Convolvuli at rest on palings here.—*W. Frohawk; Wellesley Road, Croydon, October* 5, 1875.

Sphinx Convolvuli at Norwich.—On the 20th of September a friend of mine took a specimen of Sphinx Convolvuli at rest outside this city.—*Robt. Laddiman; Cossey Terrace, Upper Hellesdon, Norwich.*

Sphinx Convolvuli at Peckham.—I captured this morning on my way to school, in the Clayton Road, High Street, Peckham, a specimen of Sphinx Convolvuli. Having no box I was obliged to make a paper-bag to put it in, and it remained quiet for several hours.—*Arthur A. Barrett; 34, Radnor Street, Peckham, London, October* 4, 1875.

Sphinx Convolvuli and Macaria alternata at Christchurch.—Would it interest any of your readers to know that Sphinx Convolvuli occurs in this locality regularly every season during September? I have now on my setting-board two fine specimens, caught on the 14th and 15th September. Three years ago I captured in July several fine specimens of Macaria alternata; last year, two; this season, only one.—*W. McRae; Christchurch School, Hants, Sept.* 22, 1875.

Sphinx Convolvuli at Christchurch.—Between the 17th and 25th of September I had the good fortune to secure three fine specimens of Sphinx Convolvuli. Do the females of this species hybernate? If so, do they deposit their eggs before or after hybernation? Having several times attempted to procure eggs from captive females, I have in each instance failed. I should be glad of any information relative to this species which you or any of your correspondents can communicate.—*W. McRae; Christchurch School, Hants.*

Sphinx Convolvuli, Epunda nigra and Xylina petrificata at Newton Abbot.—On the 25th September last I captured two fine female specimens of Epunda nigra at sugar, and on the following night two more,—one at sugar and the other at light; they have never been caught here before; indeed, I had no idea that they came so far inland, they being generally caught by the sea-side in Devonshire, as, for instance, Teignmouth, Torquay, &c. I also had the good fortune to catch another fine Convolvuli, this making the fourth capture here this year. Last night (October 7th) I captured, for the first time, four specimens of Xylina petrificata at sugar; I believe they are considered a very local species.—*Charles G. Vicary; Knowles, Newton Abbot, October* 8, 1875.

Sphinx Convolvuli, Glæa erythrocephala, &c., at Wells or in Wales.—On showing my collection of Noctuæ the other day to the Rev. A. C. Hervey, he noticed a moth which I had placed near Cerastis spadicea, thinking it to be a variety of that species, as it was unknown to me. Mr. Hervey at once said that he thought it was Glæa erythrocephala; and on referring to Newman's 'British Moths' I think there is no doubt he was right. On looking at my notes I found it was taken at sugar in my garden on the 4th of October. I have had a great number of Noctuæ at sugar in my garden this year. I place it only on two apple-espaliers, and a board. Early in the year Agrotis exclamationis, Noctua xanthographa, Triphæna pronuba, and Xylophasia polyodon, came literally by hundreds; and later in the season Polia flavocincta was nearly as common. At this time Anchocelis pistacina is the common frequenter of the trees. I have taken during the past three months—Amphipyra Tragopogonis (common), Catocala nupta, Agrotis puta (a very dark series), Xylophasia lithoxylea, Xylina rhizolitha, Acronycta Psi, Miselia Oxyacanthæ, Xylina semibrunnea (three specimens), Agrotis saucia, and some beautiful varieties of the very variable Anchocelis pistacina. A fat larva of Triphæna pronuba visited one tree regularly every night for a week, and enjoyed its luscious drop as much as the perfect insect. I may add to the notes respecting Sphinx Convolvuli that I have added one fine specimen to my collection this year, caught in Wales; and that Mr. Dove, of the County Asylum near, has caught two or three. I saw one more, which was not taken.—*H. W. Livett; Wells, Somerset, October* 11, 1875.

Deiopeia pulchella near Paignton.—Yesterday, September 24th, I had the pleasure of taking another specimen of Deiopeia pulchella, a rather worn female, at Salterne Cove, near Paignton. As I felt certain of capturing it, when I once saw it, I watched its habits for ten minutes or so. The afternoon was bright, and the insect was flying about, and settling continually on the flowers of Eupatorium cannabinum, which grows in profusion at Salterne Cove. I kept the insect alive to see if it would lay any eggs, but it has died in the course of last night. Including the specimen I took on the 25th September, 1874, this is the third Deiopeia pulchella I have taken within a circle of a hundred yards, and within seven days of each other,—September 18th, 24th, 25th.—*J. A. Lilly; Collaton Parsonage, Paignton, South Devon, September* 25, 1875.

Deiopeia pulchella at the Land's End.—On the 17th of

September a gentleman who was with me caught a specimen of Deiopeia pulchella flying at dusk on the cliffs near the Land's End, Cornwall; and, by searching near the same spot, I myself subsequently caught three more,—two on the 20th, and one on the 22nd September. All four specimens are in fine condition, and appear as though lately emerged from the chrysalis.—*Annie Michael;* 3 & 4, *Great Winchester Street, London, E.C., September* 28, 1875.

Deiopeia pulchella at Bournemouth.—I have to record the capture of Deiopeia pulchella on the coast of South Hampshire. Two were taken, and another seen, by the daughters of Lady Hester Leeke, who kindly presented me with one of them. Lady Hester has also sent me the following note on the subject:—"The first was taken on the grass-plot before the house at West Cliff, in the afternoon of September 16th; and the second on the East Cliff, near Boscombe Chine, among the tufts of stunted vegetation near the edge of the cliff, also in the afternoon, about three days after the capture of the first. They fly very slowly near the ground." The spots upon the fore wings of both specimens are much smaller than in the few foreign specimens I have seen; but such a variation is, I believe, not uncommon amongst continental examples of this beautiful, and until of late years very rare, British species. A friend informed me some time since that the species is very common in some parts of India.—*G. B. Corbin.*

Deiopeia pulchella and Epione vespertaria at Waltham Cross.—On the 19th of September last, when on the look-out for Colias Edusa and C. Hyale in a clover-field here, I took a specimen of Deiopeia pulchella. It is quite perfect and very fresh, apparently only just emerged from the chrysalis. It was flying heavily, settling occasionally on the heads of clover. On the previous afternoon I caught a male Epione vespertaria in the same field, at rest on a piece of wood; unfortunately its wings are somewhat crumpled. I believe this is a new locality for both species.—*Arthur W. Paul; Waltham Cross, October* 4, 1875.

Deiopeia pulchella in Devonshire.—A female specimen of Deiopeia pulchella was taken on the wing, on the afternoon of October 2nd, in Challice's nursery here.—*J. Purdue; Ridgeway, Plympton, Devon, October* 19, 1875.

Captures at Sugar.—During August and September I captured the following insects at sugar in this locality:—Thyatira derasa, several; Cymatophora diluta, commonly; Leucania conigera and Nonagria fulva, a few; Hydrœcia nictitans, commonly; H. micacea, a few; Cerigo cytherea, commonly; Apamea fibrosa, two; Agrotis puta, very abundantly; A. aquilina, commonly; A. ravida, commonly; A. pyrophila, several; Triphæna fimbria and T. interjecta, common (the latter particularly so); Xanthia citrago, X. cerago, and X. silago, commonly; Xanthia gilvago and Cirrœdia xerampelina, several; Tethea subtusa, four; Cosmia diffinis and C. affinis, extremely common; Polia flavocincta, two; Heliothis armiger, one; Catocala nupta, several. They were all taken in the same locality, the sugar being laid upon sixteen trees in a road facing a wood.—*A. J. Spiller; Stanstead, Bishops Stortford.*

Captures at Sugar: Xanthia aurago, Epunda lutulenta, &c.—I commenced sugaring early in June; but until September with little or no success, the result being nearly always the same,—"a beggarly account of empty boxes." In September, however (which was here a month of most glorious weather), things changed for the better; and as the species I took are somewhat local I think them worth recording:—September 13th, one Epunda lutulenta (female); 17th, two Xanthia aurago; 18th, four E. lutulenta (two males and two females) and three X. aurago (including a very beautiful variety, the median portion of the fore wings being so thickly sprinkled with crimson-purple scales as almost to obliterate the usual orange; this colour is quite distinct from the ferruginous purple bands at the base and hind margins); 22nd, one X. aurago; 24th, three X. aurago, one E. lutulenta, one Agriopis aprilina, and one Calocampa exoleta. It is rather strange, but in this particular locality X. aurago is more abundant than either Xanthia cerago or X. silago. I omit all reference to the "ignobile vulgus," such as Anchocelis litura, A. lunosa, A. pistacina, &c., which were only of too common appearance.—*Joseph Anderson, jun.; Alresford, Hants.*

Captures at Newton Abbot.—I have received a very fine specimen of Xylina semibrunnea, and also a specimen of Sphinx Convolvuli (taken in a stable, dead), from Bagtor, a little village on the borders of Dartmoor. I have also had the pleasure of capturing three more Xylina petrificata at Newton Abbot.—*Charles G. Vicary; Knowles, Newton Abbot, Devon, October* 22, 1875.

Xanthia aurago near Willesden.—On the 18th September, in company with Mr. A. Priest, I sugared an open fence near Willesden Junction, and was rewarded with a fine specimen of Xanthia aurago, an insect I did not expect to meet with so near London.—*C. Seabrook; Marlborough Square, Chelsea, September* 22, 1875.

Cirrœdia xerampelina in Scotland.—I took a good specimen of Cirrœdia xerampelina here, on the night of the 30th August last, at sugar.—*Robert Service; Maxwelltown, Dumfries, N.B., October* 1, 1875.

Cirrœdia xerampelina at Hendon.—In the autumn I am in the habit of sugaring the foliage of pyramid yews, Arbor vitæ and other shrubs, as I find that insects come more freely at this period of the year to sugar when laid so, than when spread on the trunks of trees. It was on a yew so baited I had the pleasure of taking a fine pair of Cirrœdia xerampelina; one, a female, on the 7th of September, and on the 8th a male on exactly the same spot. Xanthia gilvago has been rather common here this season.—*R. South; Goldbeater's Farm, Hendon.*

Eremobia ochroleuca in Cambridgeshire.—I see that in Newman's 'British Moths,' Brighton and Lewes in Sussex, Bristol, Suffolk, and Yorkshire, are the only localities given for Eremobia ochroleuca. I took two or three specimens about the middle of August, some five or six years ago, at Gamlingay, in Cambridgeshire; they were flying about thistles and other wild flowers by day. I saw several others, but did not take them.—*John T. Sarll;* 8, *High Street, Camden Town, October* 7, 1875.

Ennomos fuscantaria.—On the evening of September 22nd I took from the street-lamps two specimens of Ennomos fuscantaria; one in good order; the other was unfortunately spoiled in boxing.—*Joseph Anderson, jun.; Alresford, Hants.*

Catocala electa at Brighton.—On the 24th of September I had the good fortune to take at sugar, about eight miles from Brighton, a specimen of Catocala electa, which I think is the first recorded British capture. It was taken in a strong south-west wind, off an elm-tree, about eight o'clock. It is now in the possession of Mr. Meek, of Brompton Road.—*A. Vine; Temple Street, Brighton, October* 15, 1875.

[Mr. Meek writes as follows:—"When at Brighton last Saturday I bought what I supposed to be a *var.* of Catocala nupta; but, upon comparison with a European collection, I find it is Catocala electa. What a grand addition to our list! I may add that Mr. Vine is a gentleman in whose statement I have the fullest confidence. The moth was also seen, when scarcely dead, by Mr. Trangmar, Mr. McArthur, and others, who all thought it an extraordinary *var.* of Catocala nupta.—*E. G. Meek;* 56, *Brompton Road, S.W., October* 14, 1875."]

Acentropus niveus at Sheerness.—In the middle of August last I found this insect in great abundance at a locality where it was scarce in 1874. There were hundreds of dead specimens floating on the water, accompanied by many apparently half-dead. Living examples clung to the reeds, or to any weeds which raised them so much as a head out of the water; and at dusk they were to be seen flying in all directions close to the water. The easiest mode of capture was to turn over some stones which lay at the water's edge, when as many as a dozen or twenty might be seen on a single stone. With one exception, the specimens that I set are of uniform size. The ordinary size is less than half an inch, but one female specimen measures nearly an inch. I searched carefully for more large examples, without success. —*J. Platt Barrett;* 34, *Radnor Street, Peckham, October* 12, 1875.

Vanessa Antiopa near Norwich.—On the 9th of August a fine specimen of Vanessa Antiopa was taken by a gardener in a greenhouse at Thorpe, Norwich.—*J. Parker;* 6, *Surrey Terrace, Norwich, October* 25, 1875.

Astynomus ædilis at Cardiff.—On the 29th of November last I had the good fortune to take a fine male specimen of Astynomus ædilis upon a lady's dress in a tram-car. The antennæ are very fine. Is this a common beetle?—*T. L. Howe; Cardiff, October,* 1875.

[It is common in Scotland, not in Wales.—*E. Newman.*]

Correction of an Error.—I wish to correct an error made by me in advertising my capture of Hadena peregrina (Entom.

viii. 229). My specimen proves to be only a pale variety of Proteus. It was quite an oversight of mine recording the capture, as I had not previously compared it with examples in my cabinet; and the plates of Proteus in Newman's 'British Moths' are quite different to any I have ever seen of the latter species. Indeed, I should have believed the plates to represent a different insect.—*W. Thomas; Surbiton Villa, Surbiton, October* 6, 1875.

[I fear that others of Mr. Thomas's captures have been incorrectly named. I need hardly point out the necessity for greater care.—*Edward Newman.*]

Answers to Correspondents.

John Bristow and Arthur W. Paull.—Pear-tree Slug.—This is a matter which may prove interesting to your readers, and concerning which I should be glad to have information. A friend of mine, living near Belfast, informed me that his pear-trees were being destroyed by an insect which neither he nor his gardener had ever seen before. In two large gardens almost every pear-tree was attacked, while plums, peaches, &c., even though their leaves withered, were untouched. On examination I found the leaves covered with what at first sight appeared small leeches, about half an inch long, of a shining, dark olive-green colour, almost black; the head was swollen; and the tail, at its extreme point, generally slightly raised from the leaf. The whole insect was covered with a dark slime, that gave it the appearance of a leech, neither legs nor distinct head or mouth being visible. On rubbing one of the insects, however, I found the slime rubbed off, and revealed a larva, with distinct characteristics of that of a sawfly. The leaves are denuded of their soft cuticle, both on upper and under side, and the brown skeleton of fibre alone left. When feeding, the larva is at full stretch, apparently adhering as close to the leaf as a leech or slug, and no appearance of head, the shining slime covering all. Can you inform me of what species this is; or if it has been observed in such destructive numbers elsewhere?—*J. B.*

[The creature is the very objectionable pear-tree slug, of which an account will be found in the current number. I am indebted to the courtesy of Mr. Arthur W. Paull, of Waltham

Cross, so celebrated for his roses, for a supply of these slugs, feeding on the leaves of pear, cherry, and service.—*Edward Newman.*]

J. E. Sharp.—English Names.—If you could kindly tell me the English appellations of the following you would greatly oblige:—Spilodes palealis, Argynnis Niobe, Catephia alchymista, Penthina sauciana, Notodonta palpina, and Lithosia quadra. Also if you can inform me where I could obtain a list of English and Latin names of butterflies and moths.—*J. E. S.*

[Notodonta palpina is called the "pale prominent;" Lithosia quadra, the "four-spotted footman;" and Catephia alchymista, the "alchymist." These names seem to border on the nonsensical, and had better be discontinued. The others do not appear to have received English names.—*E. Newman.*]

Geo. T. Porritt.—Duplicate Descriptions of Larvæ.—A few months ago you told me you never published descriptions of larvæ of species which had previously been described in the 'Entomologist' by yourself. Your September number (Entom. viii. 194) contains a description of that of "Emmelesia decolorata," by the Rev. G. A. Smallwood, and you will find full description of it by yourself, from specimens I sent you, in the August or September number, 1867. The same thing has occurred several times before; with Lobophora hexapterata, for instance.—*G. T. P.*

[I am greatly obliged to Mr. Porritt for the courteous manner in which he has pointed out this oversight. I had completely forgotten the two prior descriptions to which he refers. There is, however, some difference between the two gentlemen. Mr. Smallwood had evidently overlooked the fact that I had supplied the omission in 'British Moths' by publishing a full description of the larva of Decolorata at page 325 of vol. v. of the 'Entomologist,' whilst some, at least, of Mr. Porritt's descriptions appeared to be *advisedly* duplicate. Be this as it may, I must express my decided objection to duplicate descriptions of the same object in the same journal; and I hope Mr. Porritt will accept this view, seeing what a multitude of objects and of facts still await a chronicler.—*Edward Newman.*]

C. A. Harris.—Larva of Acronycta Alni. Dog-tick.—The larva is certainly that of Acronycta Alni, much shrunk owing to the exhausting operations of the parasites preying on its vitals. The parasites are a species of Anthomyia, probably that called Musca Larvarum by Linneus. The other insect is Ricinus Canis, the common dog-tick; of course it has no connection with the Acronycta.—*E. Newman.*

Henry J. Slack.—Moth with Perforating Maxillæ.—Last year Mr. McIntire presented to the Microscopical Society a slide containing the antlia of an unknown moth, with the extremity adapted for perforation. The 'Comptes Rendus' for August 30th, 1875, gives a paper by M. Künckel on "Perforating Lepidoptera," with figures of the auger-like proboscis of Australian Ophideres. The paper refers to an account given in the 'Capricornion,' published at Rockhampton. I can learn nothing of this magazine, which I suppose from its name is issued in tropical Australia. I shall be much obliged if you can tell me whether any English moths have perforating proboscis, or any others you may be acquainted with. I fancy that, as many entomologists are not microscopists, such a piece of apparatus may have been overlooked. The mounters of objects usually select insects easily obtained, and we may have some like the Ophideres in the respect mentioned. The Ophideres are reported to attack oranges.—*H. J. S.*

[I have not seen the paper in the 'Comptes Rendus' to which my correspondent refers, nor do I know any instance of an English moth possessing perforating maxillæ; still I am by no means disposed to deny or doubt the existence of such a structure. Turning to Westwood's 'Modern Classification,' I cannot find any notice of this peculiarity; and I think that most industrious and praiseworthy compiler would scarcely have overlooked, or failed to repeat, such a record, had one existed prior to 1840,—the date of his great work. Notwithstanding this apparent absence of record, there is nothing improbable in the statement. I must here call attention to the universal belief, repeated by Westwood (Classification, ii. 498), that "the mouth of Diptera is formed only for imbibing fluid matter;" and contrast this with what I have stated to be the truth, as shown by Müller, Bowerbank, Deane, Bennett, and a host of others, and corroborated by my own observations, that all those Diptera, supposed to frequent flowers for the sake of honey, as Syrphidæ, Eristalidæ, &c., are purely pollen-eaters, and subsist on the hard, dry, pollen granules, produced so abundantly by our autumnal flowers. I cannot avoid concluding that our microscopists have never examined the contents of the abdomen of a Syrphus, stuffed, as it often is, like a pincushion, with perfectly dry pollen. I fully unite with my correspondent in regretting that many entomologists are not microscopists,—doubtless entomologists should utilise the microscope more extensively; but I must couple my lamentation with a wail equally heartrending, that many microscopists are not entomologists, or we should never have waited until 1873 to learn a fact so very patent as that the flower-loving Diptera feed on pollen. Let us help one another, and both will receive the benefit.—*E. Newman.*]

S. von Stürmer.—What to look for.—Two or three of us, young as collectors, take in the 'Entomologist,' and it is most interesting, but its records are all of the past. I would suggest that some hints as to what to do, or what one may expect for the time of year, be made for the coming month, or rather the month of publication. I do not mean a perfect list, for that would be impossible, but some of the more common and larger insects. This would be I know a great boon to many.—*S. v. S.*

[I would suggest the purchase of 'Merrin's Calendar,' which shows what may be expected every month.—*Edward Newman.*]

Mrs. Newhouse.—Name of a Moth.—Mrs. Newhouse will be obliged if Mr. Newman will kindly name the moth, half of which is enclosed.

[Euplexia lucipara.—*E. Newman.*]

Millière's Work.—I bought, at the late Mr. Henry Doubleday's sale, Millière's 'Iconographie et Description de Lepidoptères et Chenilles Inedits.' Nos. 24, 27, 28, 30, 31, 32, 33, and 34, are missing. If any of Mr. Doubleday's friends have these numbers, and do not want them, will they communicate with me?—[*Rev.*] *H. Harpur Crewe; Drayton-Beauchamp Rectory, Tring, October* 7, 1875.

West London Entomological Society.—The Third Annual Exhibition of the above Society will take place in the

Church Room of St. Mark's Institute, George Street, Oxford Street, on the evenings of the 2nd and 3rd December, from 6 to 11 o'clock P.M.—*E. W. Timms; Secretary.*

Haggerston Entomological Society.—The Annual Exhibition of this Society will be held in their rooms at the 'Brownlow Arms,' Brownlow Street, Haggerston, on the evenings of Thursday and Friday, November 11th and 12th, from 7 to 11 P.M. All entomological friends are invited to attend; the first evening being specially reserved for them. Anyone wishing to exhibit will kindly send their exhibitions on or before Thursday evening, November 11th, to the Secretary, Mr. Bartlett, at the above address.

Leeds Naturalists' Field Club, and Scientific Association.—At the one hundred and eighty-ninth meeting of the above Association, September 15th, 1875, Henry Pocklington, F.R.M.S., President, in the chair, Mr. James Abbott reported the capture of Colias Edusa on the 5th September, on the Otley Road, near Adel Dam, five miles north of Leeds. The insect was identified by Mr. W. E. Clarke. Other members reported that a specimen of Vanessa Antiopa had been taken about a fortnight ago in the neighbourhood of Kirkstall Road, Leeds, and was now in the possession of Mr. C. W. Liversedge.

Death of Mr. Charles Tester.—It is with sincere regret I record the death of Charles Tester, of Balcombe. He died at his residence, Sherlock's Farm, on the 17th of September, at the age of forty-eight, after a very few hours illness. Mr. Tester never went far from home in search of insects,—Brighton and Lewes being the longest journeys he ever made,—but he worked his own locality well. In his youth he met with a sad accident by the bursting of a gun, which caused the amputation of his left hand; shortly after which his brother shot his right hand off, thus leaving him in an almost helpless state; but by various ingenious inventions he could manage to use a net and cyanide-bottle; and we have to thank him for most of the British examples of Dicranura bicuspis, Sesia spheciformis, Notodonta carmelita, Noctua ditrapezium, and Cucullia Gnaphalii.—*E. G. Meek; 56, Brompton Road.*

B. COOKE, JUN., & CO, NATURALISTS AND FURRIERS, 21, Renshaw Street, Liverpool.—Birds and Animals Preserved, Stuffed, and Skins dressed for Rugs; Horns mounted for Halls; Furs Cleaned and Altered.

B. COOKE, JUN., & CO., have now for Sale a Magnificent Specimen of CRYMODES EXULIS, taken last July near Loch Laggan, price £2 10s.; also splendid C. Vetusta, at 6s. per dozen; and other British Insects at low prices.

To Fern Growers.—B. COOKE, JUN., & CO., have for Sale that Rare Fern, ASPLENIUM VIRIDE, from the Spean Valley, below Loch Laggan, price 5s. per dozen roots, in pots; and 3s. per dozen, not potted.

FOR SALE.—Fine bred specimens of T. Pruni and Betulæ, S. Fuciformis, Culiciformis, Chrysidiformis, Muscæformis and Apiformis, L. Asellus, N. Strigula, C. Plantaginis, E. Apiciaria, B. Abietaria and Roboraria, I. Vernaria, E. Pendularia, A. Inornata, S. Belgiaria, E. Decolorata, E. Pulchellata, Isogrammata, Trisignaria, Virgaureata, Albipunctata, Pumilata, Coronata and Debiliata, H. Impluviata, M. Albicillata and Hastata, A. Rubidata, C. Ferrugata, C. Silaceata and Dotata, P. Falcula and Hamula; and very many other species. These insects are infinitely superior to the captured specimens usually supplied. Also eggs, larvæ and pupæ of about one hundred species, including many that are rare or local. For Price-lists apply to

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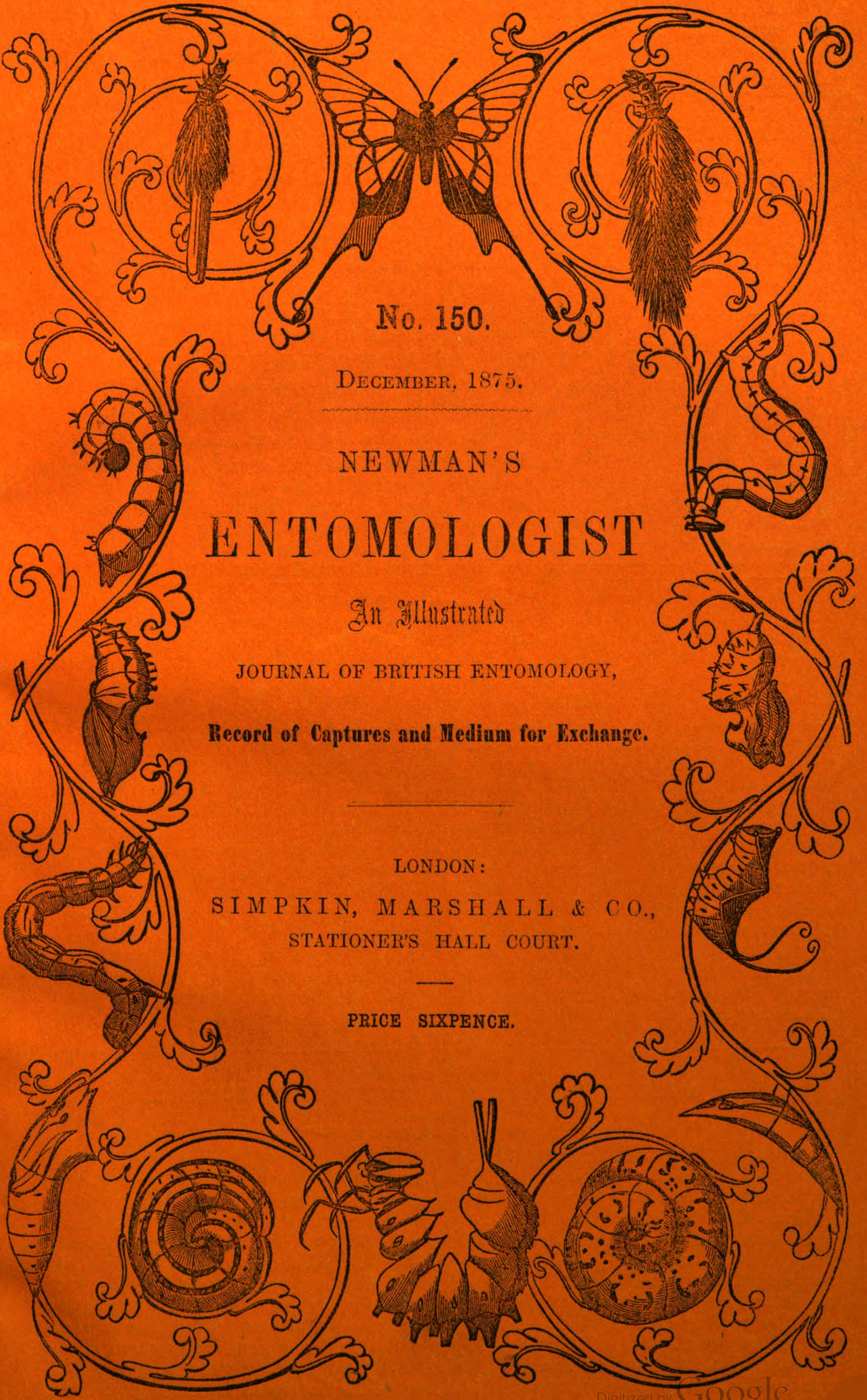

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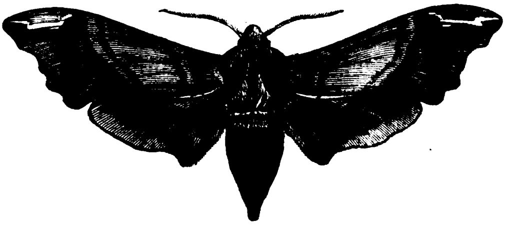


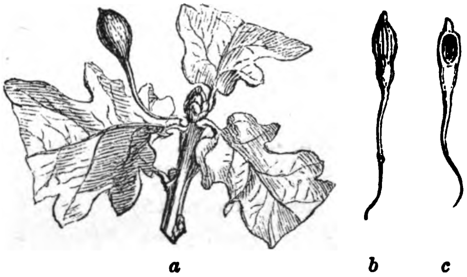
Smerinthus Tiliæ (variety).

Variety of Smerinthus Tiliæ.—This beautiful variety chiefly differs from the typical colouring in the entire absence of the median transverse fascia of the fore wings. This fascia is of various shapes; sometimes entire, but as frequently interrupted, and forming two conspicuous blotches, the upper situated about the middle of the costal margin; the lower about the middle of the inner margin. The specimen is in the rich collection of Mr. J. A. Clark, to whose courtesy I am indebted for the loan of the specimen.—*E. Newman.*

Description of the Larva of Cleora glabraria.—On the 29th of June last I found two larvæ on lichens on oak-trunks in the New Forest, which I suspected were Cleora glabraria; and a fine imago of that species, which emerged last Sunday, proved that I was correct. As there is no description of this larva in 'British Moths,' perhaps the following attempt at one may interest some of the readers of the 'Entomologist:'—

33. ***Aphilothrix callidoma***, Hart.—This beautiful spindle-shaped and long-stalked gall breaks forth from the axils of Quercus pubescens in such a manner that the small bud, from the point of which the thin pedicle proceeds, is not altered externally. The gall is about the size of a barleycorn, either short or long spindle-shaped. Its surface is green or red when recent; later on it becomes reddish brown, and exhibits a few or many either sharp or indistinct longitudinal striations. However, in some specimens there is not a trace of these striations to be detected. The top of the gall is marked, and terminates in a wart or short cone: it has a yellow-brown colour, and is bald; the remaining part of the gall and the foot-stalk are scantily covered with moderately short, white, deflected hairs. Sometimes one meets with specimens in which the thin stalk is rather short, and the basal half of the spindle very long, with the upper half, however, very short. In the section the cell appears as a large, longitudinally oval cavity, bordered by a thin, white, inner gall, which is on all sides conterminous with the substance of the gall; above and beneath this inner gall is found a brown reticulation. According to Dr. Giraud's observations the galls are found from the month of July to October, and the earliest fall off, whilst others are only beginning to develop themselves. I have myself only found them once late in the autumn.—*G. L. Mayr.*

Fig. 33.



a. Aphilothrix callidoma in situ. *b*. Detached. *c*. A section of the same.

This gall was first described by Malpighi; and Hartig did not breed the Aphilothrix, although he once met with the larva; Giraud being the first to describe the perfect insect, and he only had two galls, out of some thirty or forty, which produced the proper gall-maker, the others being infested with Synergi, of which Dr. Mayr gives two species as inhabiting these galls, *viz.* S. nervosus and S. vulgaris; Ratzeburg says Siphonura brevicauda, *Nees*, was bred from them by Hartig. I found one specimen of this very remarkable gall last July (1874) at Rayleigh, but failed to meet with others. See Ent. Mo. Mag. xi. 110.—*E. A. Fitch.*

A Month's Entomologising in North Kent.

By W. H. TUGWELL, Esq.

A MONTH in the country! This may seem a small matter to many of my favoured "brothers of the green-gauze net;" but to a pent-up Londoner it is a weighty and anxious question to settle, where he will fix his tent for his annual campaign; and, having in successive years tried the New Forest, Isle of Wight, Devonshire, Dorset, and Sussex, this July, 1875, I determined to try my own county, *viz.* North Kent, and endeavour to get a new series of Apatura Iris, which lordly species I had not taken since 1858; so having secured some comfortable rooms at a farm-house, in a very wooded district between the Thames and Medway, on July 6th I arrived at my intended hunting-grounds. A few miles walk across country, on a hot July morning, had prepared an appetite for an inside-lining of sandwich and the juice of the grape. I sat down on a gate at the entrance of a wood to discuss these animal necessities, and complete for the nonce my mundane happiness by a pipe—when, lo! sailing grandly overhead came his imperial majesty, displaying proudly, it would seem, his newly-acquired purple robes, and settled a few feet above my head on the outer branches of a young ash. I could only sit and contemplate his imperial majesty, and enjoy the sight of his rare beauty as he sat on his leafy throne, as at the moment I was quite unprepared to invade his sylvan retreat, having only a very short-handled net at hand. During my stay, however, I had the pleasure of taking fourteen,—seven males and seven females. The weather during most of the month was most unpropitious for collecting, we having such continued rain and wind, which not only prevented work, but soon spoiled the condition of most insects. All the male Apatura Iris I took were more or less damaged, but the females were in fine order. This species continued on the wing the month through, that is to say, when the weather would permit. I captured a male on the 31st. I got eggs from two females, but unfortunately they proved infertile. Catching Apatura Iris is most exciting work, but it involves a great waste of time, as one has to wait the coming of their majesties, and this year they were scarce,—some days not one would be seen,—and a long ash-pole is not a convenient thing to collect with generally.

The exquisite little Nola albulalis, too, was one of my objects of search, and I succeeded in taking it in splendid order; and when really fine it is extremely pretty. I failed, as did everyone else, to find it in the numbers Mr. Porritt reported last year; this season Mr. Porritt only secured nine or ten specimens in his week's stay. I found this species particularly influenced by weather,—the slightest fog or north-east wind and you may as well go home, for not a specimen will rise, although I could take them when the underwood was saturated with heavy rain.

A striking feature to me was the absence of any of the fritillaries: the only species I saw during my stay was Melitæa Athalia, and of that very few indeed; possibly that species was over. Thecla W-album was common, but soon out of condition, owing to the wet and wind. The autumn brood of Lycæna Argiolus was just out as I left. The common Vanessidæ and Satyrs comprised the Diurni; in fact this group was but poorly represented.

The wet, cold weather seemed propitious for sugar, as I never experienced such a numerous attendance at my ambrosial banquets before; many species absolutely swarmed. I have counted over fifty Rodophæa tumidella on one tree, beside hosts of others. Although I got nothing especially rare, I secured a fine series of many good things: Lithosia quadra was a rare visitor; Mamestra abjecta, I got but one; Agrotis ravida, a fine series; Triphæna fimbria was most abundant, and in every shade of brown from palest to darkest; Agrotis nigricans, too, was in splendid variety; Thyatira batis, T. derasa, Acronycta Ligustri, A. Rumicis, Cosmia affinis, Amphipyra Tragopogonis, Noctua triangulum, Gonoptera libatrix, and Epunda viminalis, were common; whilst Xylophasia polyodon, Triphæna pronuba, T. orbona, Agrotis Tritici, Apamea oculea, Miana strigilis, and Cosmia trapezina, jostled each other for standing-room,—it was a sight to see them. The following better things, too, were less abundant:—Hypenodes albistrigalis, H. costæstrigalis, Pyralis glaucinalis, P. fimbrialis, Phycis roborella, and a few extremely fine Toxocampa pastinum. I certainly never saw sugar so attractive before.

The underwood being so much soaked by rain made it bad for beating and for getting Geometræ. However, I obtained Limacodes Testudo, Nola strigula, Cidaria picata, Pericallia syringaria, Melanthia rubiginata, Eupithecia plumbeolata, and E. tenuiata; the local Acidalia rusticata was not rare in its peculiar spots; Acidalia inornata deposited me sixteen eggs, from which I obtained sixteen imagos this October,—this appears contrary to rule; and from a batch of eggs of Acidalia emutaria, from the Gravesend marshes, I reared a fine series, only five weeks in larva, and imagos produced early in September, although a few of the same batch are hybernating as larvæ.

Of the Tortricina I only met with the following:—Tortrix transitana, T. corylana, Dichelia Grotiana, Leptogramma Boscana, Peronea Schalleriana, P. variegana, P. tristana, Lœflingiana, Penthina ochroleucana, Antithesia salicana, Phtheocroa rugosana, Pædisca profundana, Argyrolepia æneana, Eupœcilia angustana, and Cochylis inopiana: the beautiful Pterophorus rhododactylus was difficult to get in any number; so many larvæ had been collected that the species was and probably will be, year by year, a more scarce insect. It is well to know the life-history of all species, but at times it may not be an unmixed good, as it entails, in many instances, an almost entire destruction of a species, by too closely working it in its larval state.

Had the weather been more propitious I should doubtless have had better sport; but I returned from my trip well pleased with North Kent as a collecting-ground.

W. H. TUGWELL.

3, Lewisham Road, Greenwich.

Recreations of a Country Doctor concerning Sugaring.

By H. W. Livett, M.D.

It was about the year 1830 that I met with and was enchanted by Rennie's books in the Library of Entertaining Knowledge,—'Insect Transformations,' &c. From that time to the present (with, I am sorry to say, an *hiatus* of some twenty years) I have been a collector, though still but a "discipulus," as quaint old Izaak Walton says. One reason why I have not attained the rank of "magister" may be because I have not known anyone near of kindred taste with whom I could work and learn; but the principal hindrance has been my limited opportunities, owing to the engrossing nature of my profession,—one which of necessity occupies nearly all one's time, often Sundays as well as working-days.

With what envy have I read from time to time of expeditions to the New Forest or other favoured localities, with the long lists of consequent captures; of the "happy hunting-grounds," where larvæ of the most desirable species would tumble into your umbrella at each tap of the beating-stick; or where the graceful Camilla might be seen "skimming lightly o'er the plain;" where C. Edusa and Hyale might congregate; or even the great emperor himself might royally disport, delighting the eye and quickening the pulse of the would-be captor! But to me—occupied most of the day, and of necessity at home when not so occupied, with holidays very few and far between—such delights were only to be read of and dreamt about, not to be enjoyed. Doubtless there must be many an aspirant to entomological knowledge with like limited opportunities;—for the encouragement of such I write this paper.

I live in a small city,—a *rus in urbe*, certainly,—and in which most of the private houses have gardens attached: my own is a fairly good one, and in it I have taken many species, some rare. In 1868 we took eight specimens of S. Convolvuli, hovering over a small bed of petunias less than three feet in diameter; and all of which specimens, I may note by the way, were seen at exactly the same time on the five or six evenings they appeared, *viz.* just at twilight. I took in 1872 a specimen—the only one I ever saw—of D. rubiginea, on the berries of a yew on the lawn. C. sponsa and G. erythrocephala—the last an especial great take—fell victims to their liking for sugar; and of this year's captures I will now proceed to speak.

I may premise that I brush my sugar—made into syrup with beer, and flavoured with rum—at about sunset on two espalier apple-trees, standing some few yards apart. I brush it in one continuous streak, from about five feet high to within a foot or two of the ground: from this some thin lines of the syrup will run, on which many moths will settle in preference. I have read much of favourable nights,—calm, dark, warm, moist; I cannot say that I have found any kind of night peculiarly favourable or otherwise. My most successful night of the later part of this season was on the 16th of October, when the moon, nearly full, was shining brightly; the wind north-east, and a good deal of it; the thermometer lower than usual (it fell to 33° that night): and yet I took eight or nine species, including three X. semibrunnea, and C. exoleta and A. aprilina.

I began to sugar early in August, and took my last moth November 3rd. At the commencement I did not possess one of those useful oval zinc boxes which I subsequently procured, but only a cyanide bottle, yet with this I missed very few. I took in it three C. nupta, though how so large a moth got in without injury is a mystery. The last month I have used the oval box, with bruised laurel-leaves, adding to them a little chloroform just before using, as I find the moth drops in more readily on account of the vapour, and is almost instantly rendered quiet, if not insensible, so that the box is ready for another capture. I have taken eight or ten insects at one visit quite rapidly; and if a small piece of leno be put into the box, the moths catch their feet in its meshes, and do not injure each other. To prevent the stiffness consequent upon death by chloroform, I put the captures I wish to retain, after examination, into a relaxing box, *i.e.* a mustard-tin, containing bruised laurel-leaves covered with leno, and give the rejected ones a chance for their lives by placing them on the grass, and I find that they nearly all recover. Whether their narrow escape renders them teetotallers for ever after, I have not ascertained. I fear not, unless they are much more virtuous than the genus *homo*.

The species I have taken in the three months on the two trees are as follows:—

T. batis, one; B. glandifera and B. perla, common;

A. tridens; A. Rumicis; L. lithargyria, plentiful; L. straminea; A. putris; X. lithoxylea; X. polyodon, dozens; A. oculea; M. strigilis; C. cubicularis; A. puta, a dark series; A. suffusa; A. saucia; A. segetum; A. exclamationis, dozens; A. nigricans; T. janthina; T. orbona and T. pronuba, dozens; N. augur; N. plecta; N. C-nigrum, common; C. Rubi; C. xanthographa, dozens; T. cruda; O. macilenta; A. pistacina, dozens; A. lunosa, plentiful; C. spadicea, a few; S. satellitia, common; X. ferruginea, common; P. flavocincta, dozens; M. Oxyacanthæ, many; A. aprilina; P. meticulosa, common; X. lithoriza; C. exoleta; X. rhizolitha, many; X. semibrunnea, eight; A. Tragopogonis, common; C. nupta, three; besides a few Geometers and Pyrales.

The interest attached to sugar capturing is certainly great, —something similar I should imagine, "parva componere magnis," to that of the sportsman in the East, who cannot tell what noble game may leap out of the tangled jungle at any step; so on a dark night, when the moth-hunter proceeds with "stealthy steps and slow" to the sweetened tree, and turns on the light, he cannot tell what almost unknown rarity may possibly delight his eyes and reward his pursuit; and even some of the more common insects—M. Oxyacanthæ or C. diffinis, for example—appear, I think, more beautiful under the lamp than at any other time. I know that when I saw C. exoleta the other night, under such circumstances, I could not imagine what grand prominent I was beholding,— with his full crest and closely shut-up wings he was exactly like some important member of that family.

But it is quite time that I should conclude this gossipy paper. Scientific entomologists and practical collectors may think it, I fear me, not worth the space it occupies. I trust there are some, like myself—collectors under difficulties— to whom this paper may afford some measure of encouragement when they see how much may be done with but limited means and space at command.

Should there be a locality where A. pistacina and P. flavocincta are not plentiful, it will give me much pleasure to send any applicant a few, as long as I have any, if he will first send me a post-card. If he receives no reply he must consider that my stock is exhausted.

H. W. Livett.

Wells, Somerset.

PS.—It was a stormy night last night, November 7th, much wind and rain. I did not sugar, but went up to look at the trees, expecting nothing,—when lo! a fine and perfect Dasycampa rubiginea was my reward. I felt confident that I ought to find the species, but feared the season was too far advanced.—*H. W. Livett.*

Entomological Notes, Captures, &c.

Description of the Larva of Eupithecia togata.—On the 6th of September Sir Thomas Moncrieffe, Mr. W. Herd and I started for a locality where Eupithecia togata has occurred tolerably freely, with a resolute determination not to return home till we had found the larva and made ourselves thoroughly acquainted with its food-plant and habits. The perfect insect always occurs in the neighbourhood of spruce fir-trees; to the spruces we therefore directed our attention. Long did we carefully scan the twigs; diligently did we beat the boughs, but all in vain. "Bother the larvæ!" we all exclaimed. We stood together racking our brains, and staring up into a tall spruce. "I've got it!" we almost simultaneously cried out; "they are in the cones." "I'll go up," said Mr. Herd; and up he went, and soon began to pelt us with cones. Amongst them were several from which a copious quantity of fresh frass was protruding. These were quickly laid open with a sharp knife, and very soon a lively, fat, pinkish-looking larva, very like a miniature Cossus ligniperda, was disclosed to view, which I at once recognised to be Eupithecia togata, from a beautiful drawing which Mr. Buckler executed for me several years ago, from a larva reared on young shoots of spruce, from eggs laid by a captured female. A further search revealed sundry other larvæ: in one fresh fallen cone we found no less than seven of various sizes. They feed between the scales of the cone, upon the ripe seed at the base. The larva is a uniform dull pink, more or less clouded and spotted with black on the dorsal segments. Some of the smaller and younger specimens were very dingy. The head is black, with two small white dots at the base; on the neck are two conspicuous black dots. When full fed it quits the cone, and spins a slight cocoon on the surface of the earth. The pupa is bright red, and resembles that of Eupithecia subfulvata. Another somewhat similarly-coloured larva, apparently that of a Tortrix, feeds inside the cones in company with that of Eupithecia togata. Sir Thomas Moncreiffe believes it to be A. strobilella.—[*Rev.*] *H. Harpur Crewe; Drayton-Beauchamp Rectory, Tring, November* 1, 1875.

Paucity of Wasps; Destruction of Fruit by Bees.—I have observed that the bees have been to the full as destructive to the fruit as wasps are in ordinary years: figs, peaches, plums, and pears, have been entirely eaten away by them. Can there have been any failure in the honey from the flowers this year? or is it only the presence of the wasps that keeps away the bees from the fruit in ordinary years? Last year our honey was all eaten, and our bees nearly destroyed by the wasps. Queen wasps were, as you observe, very abundant in the spring; still this paucity of wasps is partial. A fortnight ago I was staying with a friend about five miles to the north of Launceston, and I never saw wasps more abundant than they were there.—[*Rev.*] *G. C. Green; Modbury, South Devon, October* 4, 1875. [*From the 'Field.'*]

[There is no doubt that the past autumn has been remarkable for both these phenomena. I have received fifty-one letters on the first subject, and the daily papers have teemed with communications on the second. In the spring of this year queen wasps were observed in unusual numbers; and it was generally supposed that the workers would be proportionately abundant in the autumn. This has not been the case; but, on the contrary, wasps have been either fewer than usual or entirely absent. Cornwall, Dorsetshire, Devonshire, Norfolk, Nottinghamshire, Somersetshire, Suffolk, Surrey, and Sussex, have generally enjoyed immunity from the visits and depredations of wasps; while from one locality in Essex, and two in Kent, the number appears to have been as large as usual; and from several localities in Lancashire, Yorkshire, Durham, and Northumberland, greater abundance than common has been reported. In the garden of Her Grace the Duchess Eleanor of Northumberland bottles baited with sugar and water were found to be almost filled with wasps; and the contents of two of these bottles were counted, and found to be respectively nine hundred and one thousand two hundred wasps. Mr. Higgins, Her Grace's gardener, also states that one hundred and three nests have been taken within a circle of one mile from the Hall. With regard to honey-bees, on the contrary, the number has been so large, and the depredations so excessive and so general, that complaints have been published in the daily papers, and propositions have even been made to obtain the interference of the legislation in restricting the number of hives in the localities in which they are situate! A word remains to be said as to the relation between wasps and bees. Pettigrew informs us that wasps, hornets, and humble-bees, seldom do harm or gain admission to the hives; but this requires modification or explanation as regards wasps; and it will be well to attend more carefully and attentively to the subject. Wasps quarrel and fight with bees, and of course in their altercations they frequently drive the bees from the ripe fruit on which both of them delight to feed. "Set a thief to catch a thief" is an approved and time-honoured maxim; and there is little doubt that one set of robbers is ever a check on another; so that the paucity of wasps may in some measure account for the bees exercising so freely their marauding propensities. I may state that the large number of letters I have received on this subject is doubtless attributable to an enquiry of my own in the 'Field' newspaper.—*Edward Newman.*]

Gall on Hieracium umbellatum.—In a former communication to the 'Entomologist' (Entom. viii. 233) I spoke of having seen a gall on Hieracium umbellatum, in the neighbourhood of Plymouth. I have since found some dried specimens of this that were laid aside in a cupboard, and now forward them to you. I gathered them several years ago—I believe in the neighbourhood of Horrabridge, Devon, about ten miles from Plymouth, and on the southern border of Dartmoor. They prove to be very different from what I sent on Hypochœris radicata, and may perhaps be the work of Trypeta reticulata—one of the insects mentioned by Mr. Fitch in his interesting communication concerning the other.—*T. R. Archer Briggs; 4, Portland Villas, Plymouth, October* 26, 1875.

[I believe the galls are old specimens of Aulax sabaudi of Hartig.—*Edward A. Fitch.*]

Lepidoptera near Folkestone.—C. Hyale, tolerably plentiful. C. Edusa, rather scarce. E. russula, eleven females and seven males, bred from the eggs laid in July, and many captured. A. gilvaria, plentiful. L. albipuncta, four. A. saucia, seven. N. glareosa, three in the Warren. N. Dahlii, six. X. cerago and X. silago, plentiful on flowers of Scabious. X. flavescens, *var.*, one.. X. gilvago, *var.*, two, the bar being broken into dots. Is it not strange that the original type has not been taken? T. retusa, one, worn. P. flavocincta, two. E. lichenea, two. C. vetusta, seven. C. exoleta, five. X. semibrunnea, three. H. armiger, one, very fine. S. anomala, one. *Pyralides.*—S. palealis, six. M. polygonalis, one. —*G. Haggar; 71, Granville Terrace, Folkestone, Nov.* 13, 1875.

Colias Hyale abundant, and C. Edusa, near Maldon.—During September I succeeded in taking as many as seventy specimens of Colias Hyale, the greater part in a large clover-field, in Woodham Mortimer parish, but something like a score in a lucerne-field, on the glebe-land belonging to Hazeleigh Rectory. One of the females deposited eight eggs —seven in the bottom of a pocket-box, and one on a clover-head: these unfortunately proved to be infertile, shrivelling up in a few days. Colias Edusa was not abundant: I only secured twelve good specimens, three of which were females. —*Gilbert H. Raynor; St. John's College, Cambridge, November* 10, 1875.

Colias Edusa at York.—On Thursday, September 9th, I captured a fine specimen of Colias Edusa; on the 11th two more; and on the 25th a Sphinx Convolvuli.—*J. Hawkins; Holgate, York, October* 23, 1875.

Sphinx Convolvuli at Newport, Isle of Wight.—It may interest entomologists to hear that I have taken two specimens of the Convolvuli hawk-moth. I caught them both soon after sunset, hovering over a bed of geraniums, on the 22nd and 26th of September.—*Frank Morey; Newport, Isle of Wight.* [*From* '*Science Gossip.*']

Deiopeia pulchella at Hastings.—I am pleased to be able to record the occurrence at Hastings of a specimen of Deiopeia pulchella on the 17th of October, in a field near here.— *E. A. Butler.*

Deiopeia pulchella in India.—One of your correspondents in the November number (Entom. viii. 280) alludes to having heard that Deiopeia pulchella was met with in India. Each year, from 1852 to 1856, it was abundant in my garden at Wuzeerabad (a military station since abandoned), on the banks of the Chenab river, in the Punjab; where I also caught a goodly number of Sphinx Convolvuli, Chœrocampa Nerii, C. Celerio, and a remarkably large C. Elpenor.—[*Rev.*] *J. Cave-Browne; Detling Vicarage, Maidstone.*

Correction of an Error.—In my communication in last month's number (Entom. viii. 278), "Wales" should be "Wells."—*H. W. Livett.*

Answers to Correspondents.

John Parker.—Are there Two Broods of Papilio Machaon in a Season?—It appears there are, from my experience this year. On July 1st I took, at Ranworth, several nearly full-fed larvæ of that beautiful butterfly, Papilio Machaon: they went into the pupa state in four days; and on the 19th, fifteen days afterwards, the perfect insect appeared.—*J. P.*

[From personal experience I can give little additional information to that published at p. 152 of my 'British Butterflies.' The butterfly continues to appear throughout the summer; and the larvæ, pupæ and imago were not unfrequently found on the same day by those who hunt the fens assiduously. No trustworthy record has yet been made, showing that the late imagos are the children of the earlier specimens. This, however, appears to have been decidedly the opinion of Harris and Lewin. Lewin's work was published just eighty years ago; and his statement is so explicit that it seems reliable. Later authors appear to have been mere copyists, and not to record the result of personal observation. I quote Lewin:—"The first brood of this butterfly appears on the wing in the middle of May. The female lays her eggs in ten or twelve days, and in a week's time the young caterpillars come forth. In six or seven days they shift their first skin; about the end of June they change their skin for the fifth and last time; and in six or seven days they arrive at full growth. They then prepare for their approaching metamorphosis, by fixing themselves with a strong tie round the middle and by the tail. In a day's time the chrysalis is complete; and this superb butterfly comes forth the July following. The caterpillars from the eggs of this stock are bred about the first week in August. After the usual shifting of their skins they become full fed the end of September, and change to a chrysalis in a short time. In this state they continue through the winter and until the following May."—*Edward Newman.*]

N. C. Tuely.—Food-plants of Gonepteryx Rhamni (Entom. viii. 231).—I see by the October number of the 'Entomologist' that Mr. Wilson was at a loss to find the food-plants of Gonepteryx Rhamni. In addition to the buckthorns the larva will eat the leaves of the apple, pear, and medlar, which no doubt could be supplied in any locality without much trouble.—*Edward A. Fitch; Maldon, Essex.*

G. Haggar.—Setina irrorella.—I once took a number of larvæ of Setina irrorella at Hayling Island, feeding on a ground-lichen which grows plentifully amongst the grass just outside the tide-mark. They afterwards fed fairly well on the gray lichens, which are not uncommon on apple and other trees, and I reared a set of moths. I believe this larva is exclusively a lichen-feeder.—[*Rev.*] *H. Harpur Crewe; Drayton-Beauchamp Rectory, Tring, October* 4, 1875.

——— *Food-plant of Setina irrorella* (Entom. viii. 234).—In reply to Mr. Haggar, I may say that judging from the quantity of imagos I have found stretching, and the situation where the insect occurs on the rocks—which are well clothed with lichens—at Douglas Head, Isle of Man, and where, as stated in the 'British Moths,' "there seems no suitable place for tree-lichens to grow" (Mr. Haggar appears to have misread the paragraph), I believe we may safely infer that the larva does feed on lichens which grow on the rocks; at any rate, so far as the above locality is concerned. During the past season I bred a quantity of Nudaria mundana, the larvæ of which I found feeding on lichens growing on stones: by bringing a few pieces of the stone home I had no difficulty in rearing the insect. Perhaps Mr. Haggar might succeed in a similar way with Setina irrorella.—*R. Kay; 2, Spring Street, Bury, October* 11, 1875.

——— As Mr. Haggar asks for information on the food-plant of Setina irrorella, in the October number of the 'Entomologist,' I copy the following from the Ent. Mo. Mag. viii. 171 (January, 1872), being an extract from a paper by Mr.

Buckler and the Rev. J. Hellins ("Notes on the Earlier Stages of some Species of Lithosidæ"):—"On July 30th, 1865, some eggs were received from Dr. Knaggs, and noted as globular, pearly in texture, and clear purplish brown in colour. The larvæ hatched August 13th, but no note of them was taken, and they must soon have perished from want of proper food and treatment. However, there is no doubt that in their habitat they must hybernate when small, and feed up in early summer. On May 24th, 1867, after considerable search, a number were found, then approaching full growth, on the Sussex coast. The food is a blackish brown lichen, growing on stones above high-water mark, and in some cases mixed with a yellow lichen,—a fact of much interest when the colouring of the larva is considered. The larva seems fond of sunshine, moving about in it slowly over the stones. When about to moult it protects itself by spinning overhead a number of silken threads, under cover of which it remains until the moult is completed. The moths were bred early in July." Then follows a description of the full-fed larva.—*Edward A. Fitch; Maldon, Essex.*

Henry R. Jackson.—Distinction of the Lepidopterous and Coleopterous Larvæ.—Will you kindly inform me of any characteristics by which I can always distinguish between the larvæ of Coleoptera and Lepidoptera?—*H. R. J.*

[The best distinction that I know of is that the larvæ of Lepidoptera always possess claspers on the under side of the abdomen, with strongly prehensile hooks. With these they clasp the twigs, and hold them steadily while they devour the leaves; and these organs serve also for progression, enabling them to ascend the trunk of trees with ease and rapidity. Some entomologists have called them feet or legs, often adding an explanatory prefix, as *pro*legs or *fore* legs, *prehensile* legs or *abdominal* legs. The larvæ of Coleoptera have no such organs. Then the larvæ of Lepidoptera have ten ocelli or simple eyes, five on each cheek: these are situated close to the mouth, five on each side, and give to the caterpillar the wondrous power of examining the structure of a leaf, and of thus acquiring information as to whether it is a suitable species on which to feed; these are truly microscopes of high power, and are brought systematically almost in contact with the leaf, as we use a pocket-lens of high power. These two characters are always present in Lepidoptera; and I believe Coleoptera never possess them.—*Edward Newman.*]

John B. Bridgman.—Export of Bees to New Zealand.—I enclose a notice from 'Nature' which I cannot understand. Can you help me? *What* did Buckland send?—a nest of humble-bees seems to me simply nonsense; and until now I was under the impression that by far the greater part of fertilisation of clover was done by what I suppose is meant by the "common" bee—the hive-bee. About here, during the time the clover-fields are in full flower, the fields are literally alive with hive-bees, and the noise they make may be heard some distance; of course Bombi are to be found there also. The only other bee I have seen at clover is Cilissa tricincta, and that is only one spot of white clover. "Two nests of English humble-bees were last week sent to New Zealand by Mr. Frank Buckland for the Canterbury Acclimatisation Society. These insects are specially desired in New Zealand for the purpose of fertilising the common clover. The proboscis of the common bee is not sufficiently long to reach down to the pollen of the clover-flower, while the humble-bee is enabled to do so. In this way the insect is expected to do great service to the agriculturist by largely extending the growth of clover. The bees were packed in their own nests in two boxes, and will be under the charge of a member of the New Zealand Council, who is provided with every necessary for their welfare during the voyage. They are expected to arrive about the middle of January—midsummer at the Antipodes." ('Nature,' p. 527, October 14th.)—*J. B. B.*

[I have a good deal to say on this subject hereafter; but may just state that I have worked hard at these bees with the valued assistance of the late Mr. Walker and the late Mr. Doubleday, in addition to that of many naturalists still living. Mr. Smith from time to time kindly named our captures, and I shall adopt without hesitation his nomenclature of the species. The published observations of Mr. Buckland and of the Editor of 'Nature' convey no idea to my mind, nor do I think they will to the minds of entomological readers generally.—*Edward Newman.*]

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CONTENTS.

Descriptions of Oak-galls (with illustrations): translated from Dr. G. L. Mayr's '*Die Mitteleuropäischen Eichengallen*' by *E. A. Fitch*, 289. A Month's Entomologising in North Kent, *W. H. Tugwell*, 291. Recreations of a Country Doctor concerning Sugaring, *H. W. Livett, M.D.*, 294.

Entomological Notes, Captures, &c.—Description of the Larva of Eupithecia togata, *Rev. H. Harpur Crewe*, 297. Paucity of Wasps; Destruction of Fruit by Bees, 298. Gall on Hieracium umbellatum, *T. R. A. Briggs*, 299. Lepidoptera near Folkestone, *G. Haggar*, 300. Colias Hyale abundant, and C. Edusa, near Maldon, *Gilbert H. Raynor*, 300. Colias Edusa at York, *John Hawkins*, 300. Sphinx Convolvuli at Newport, Isle of Wight, 300. Deiopeia pulchella at Hastings, *E. A. Butler*, 300; in India, *Rev. J. Cave-Browne*, 300.

Answers to Correspondents.—Are there Two Broods of Papilio Machaon in a Season? 301; Food-plants of Gonepteryx Rhamni, 302; Setina irrorella, 302; Food-plant of Setina irrorella, 302; Distinction of the Lepidopterous and Coleopterous Larvæ, 303; Export of Bees to New Zealand, 304.

To Correspondents.—Papers with the following Signatures still stand over:—Henry Bartlett, W. H. Thornthwaite, E. Goodsell, P. H. Jennings, W. A. Luff, C. S. Gregson, A. Thurnall, J. H. Gurney, jun., R. R. Nicholls, Thomas W. Daltry, G. B. Corbin, and Geo. T. Porritt.—*Edward Newman.*

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